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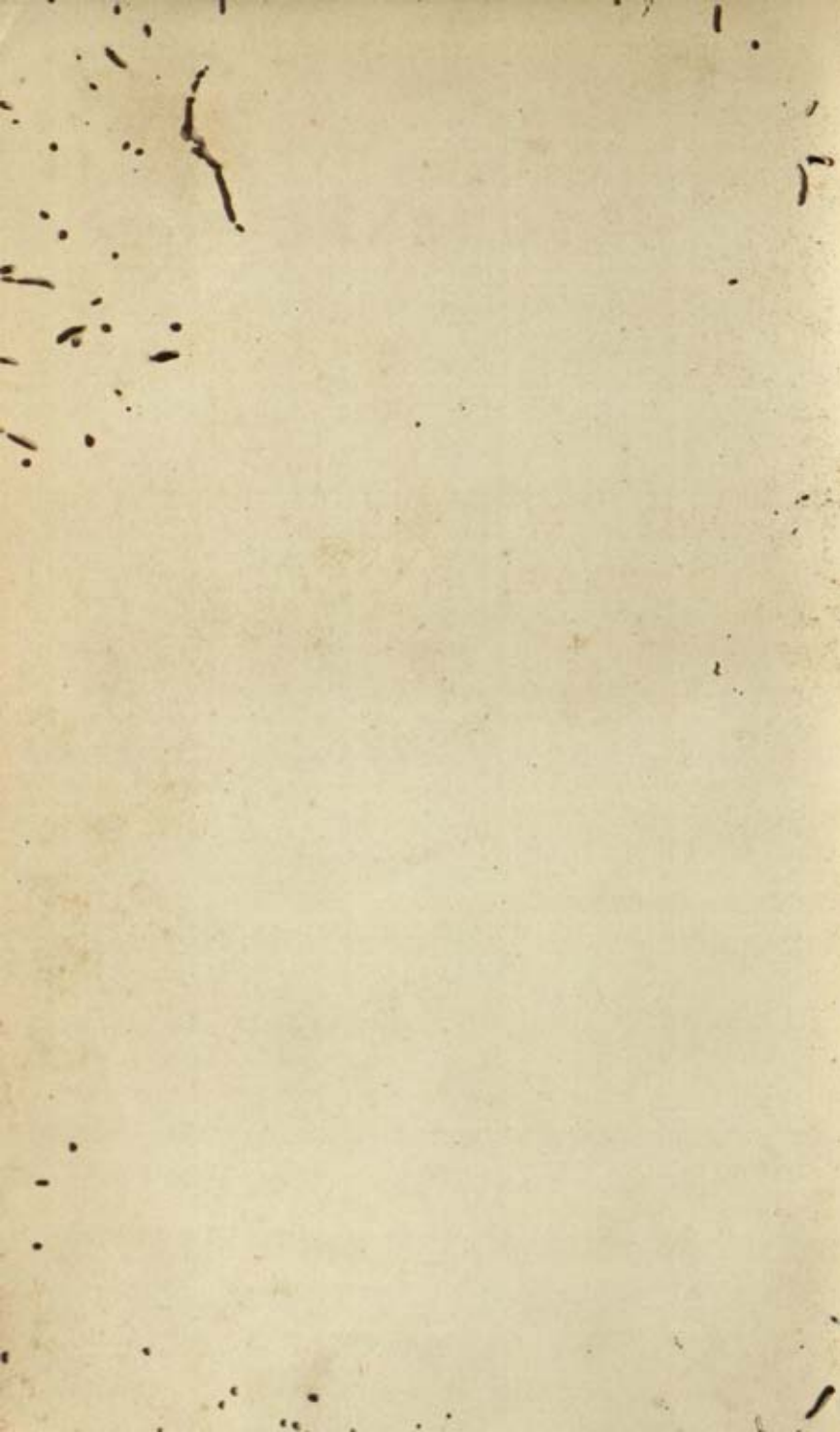
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THE
JOURNAL

OF THE

ROYAL GEOGRAPHICAL SOCIETY

OF

25222

LONDON.

910.5
J. R. G. S.

VOLUME THE SIXTEENTH.

1846.



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Royal Geographical Society.

1846.

REPORT OF THE COUNCIL,

READ AT THE ANNIVERSARY MEETING, 25TH MAY.

THE Council have to report that since the last Anniversary Meeting there have been elected 40 new Members. There have occurred 29 vacancies, of which 13 are by death, and 16 by resignation; and the Society now consists of 695 Members, besides 40 Honorary and 22 Corresponding Members.

Finances.—It having been found that, notwithstanding the efforts made to keep the expenditure of the Society within its income, this desirable end had not been effected, a Special General Meeting of the Society was convened on the 13th of May, when, as a means of increasing the income, it was resolved,—

1. That the compositions to be taken hereafter in lieu of annual payments, be 25*l.*, exclusive of the admission fee, instead of 17*l.*
2. That the Journal be no longer delivered *gratis* to Members, but sold to them at a price not exceeding 4*s.* the part, or 8*s.* the annual volume.

Arrears.—Notwithstanding the exertions made by the Secretary and the Collector to recover the arrears due to the Society, they amounted, on the 1st of January of the present year, to 453*l.*, of which it has been found impossible to recover, up to the present date, more than 76*l.*; and as there are fresh defaulters every year, it seems hopeless to expect that all subscriptions will ever be regularly paid.

Money Grants.—Although the Council have, from the state of the Society's funds, been unable to make any Money Grants

during the past year, yet they have, through their influence, succeeded in affording assistance to two travellers from whose exertions they trust material accessions may be made to geographical knowledge. A sum has been raised by subscription to enable Mr. Duncan to continue his labours in Western Africa; and scarcely had this been done when a fresh call on the Council was made to enable Mr. Brockman, who had for some time been attempting to penetrate into the interior of Hadramaut, to take advantage of a favourable opportunity which occurred for prosecuting his purpose, but which he must forego for want of sufficient funds, having already expended his private resources. On this occasion the Council appealed to Her Majesty's Government, and to the Court of Directors of the East India Company, from each of which they received the liberal donation of 100*l.*, making up the sum stated by Mr. Brockman as requisite to provide the necessary means for his journey; and the sum of 200*l.* has accordingly been lodged at the Banker's, to answer the calls to that amount which Mr. Brockman has been authorised by the Council to make on the Society.

Royal Donation.—Of the two gold medals forming the donation of Her Most Gracious Majesty, that called the Patron's Medal has been awarded to Professor A. Th. v. Middendorff, of the University of Kiew, for his explorations in Northern and Eastern Siberia; and that called the Founder's Medal to Count P. E. de Strzelecki, for his explorations in the south-eastern portion of Australia, and his valuable publication, in which he has consigned the results of his observations.

Private Donations.—The Council have again to express their grateful sense of the liberality of James Alexander, Esq., who has made a fourth donation of 50*l.* to the Society.

Journal.—The Journal, during the past year, has been continued with regularity; and the Council have to announce that they propose to effect a reduction of the expense of that publication: first, by a limitation of the number of illustrations; and, secondly, by having obtained from the printer a further reduction in the cost of printing.

Library.—The accessions to the library since the last Anniversary Meeting consist of 260 books and pamphlets; 100 sheets of maps and charts, of which latter 46 have been presented by the Lords Commissioners of the Admiralty, with their usual liberality.

In conclusion, the Council beg to express the hope that, from the effect of the new resolutions respecting the payment for the Journal, and the reductions which will be effected in its cost, and from the increase in the amount of the compositions, which it is anticipated will increase proportionately the number of annual subscribers, and also from a diminution in the rent for apartments, when the time for which our present rooms are held shall expire, the financial state of the Society will be so improved as to enable the Council to carry out those objects which they have ever been anxious to effect for the progress of geography.

BALANCE-SHEET FOR 1845.

Dr.

Cr.

	£.	s.	d.		£.	s.	d.
Balance in the Banker's hands on the 1st of January, 1845	20	14	2	House Rent and Fixtures			263 13 0
" of Petty Cash in the Secretary's hands		9	13 7	Salaries of Secretary, Editor, and Librarian			400 0 0
Entrance of 48 Members, at 3 <i>l</i> .		144	0 0	Collector's Salary			21 0 0
Composition of 19 Members, at 17 <i>l</i> .		323	0 0	Messenger's Wages			24 6 0
Subscriptions of 264 Members, at 2 <i>l</i> .		528	0 0	Firing and Lights			33 16 4
Arrears paid up		55	19 0	Stationery			14 3 10
Overpaid		1	2 0	Freight, Duty, Carriage of Parcels, Postages, &c.			45 5 11
Dividend on 2578 <i>l</i> . 4 <i>s</i> . 4 <i>d</i> . 3½ per Cents. Reduced (Income Tax deducted)		81	7 0	Evening Meetings			15 9 0
Royal Premium		52	10 0	Insurance, Advertisements, and Power of Attorney			10 8 6
Journals sold		63	9 5	Repair of Instruments			6 12 0
Index sold		10	0 0	Furniture, Repairs, and Fittings			5 4 9
Mr. Alexander's Donation		50	0 0	Journal:—Printing Index		£95 11 0	
Mr. Ker's Donation		2	0 0	Printing Part II. Vol. 13		£92 3 7	
				Printing Part II. Vol. 14		119 8 1	
				Illustrations: Part I. Vol. 14.		58 5 3	
				" Part II. Vol. 14.		58 0 0	
				Miscellaneous Printing			3 12 0
				Books, Maps, and Bindings			6 5 8
				Royal Premium			47 12 0
				Returned Subscriptions to Mr. Ker			14 0 0
				Sundries, including Christmas Gratuities			2 8 8
				Balance in the Banker's hands		£3 16 2	
				" of Petty Cash in Secretary's hands		0 13 5	
							£1,341 15 2

ROBERT BIDDULPH, *Treasurer*.

We, the undersigned, have examined the above accounts with the particulars thereof, and approve the same.

JAMES BANDINEL, } *Auditor*.
 GEORGE O'GORMAN, }

29th January, 1846.

ESTIMATE FOR 1846.

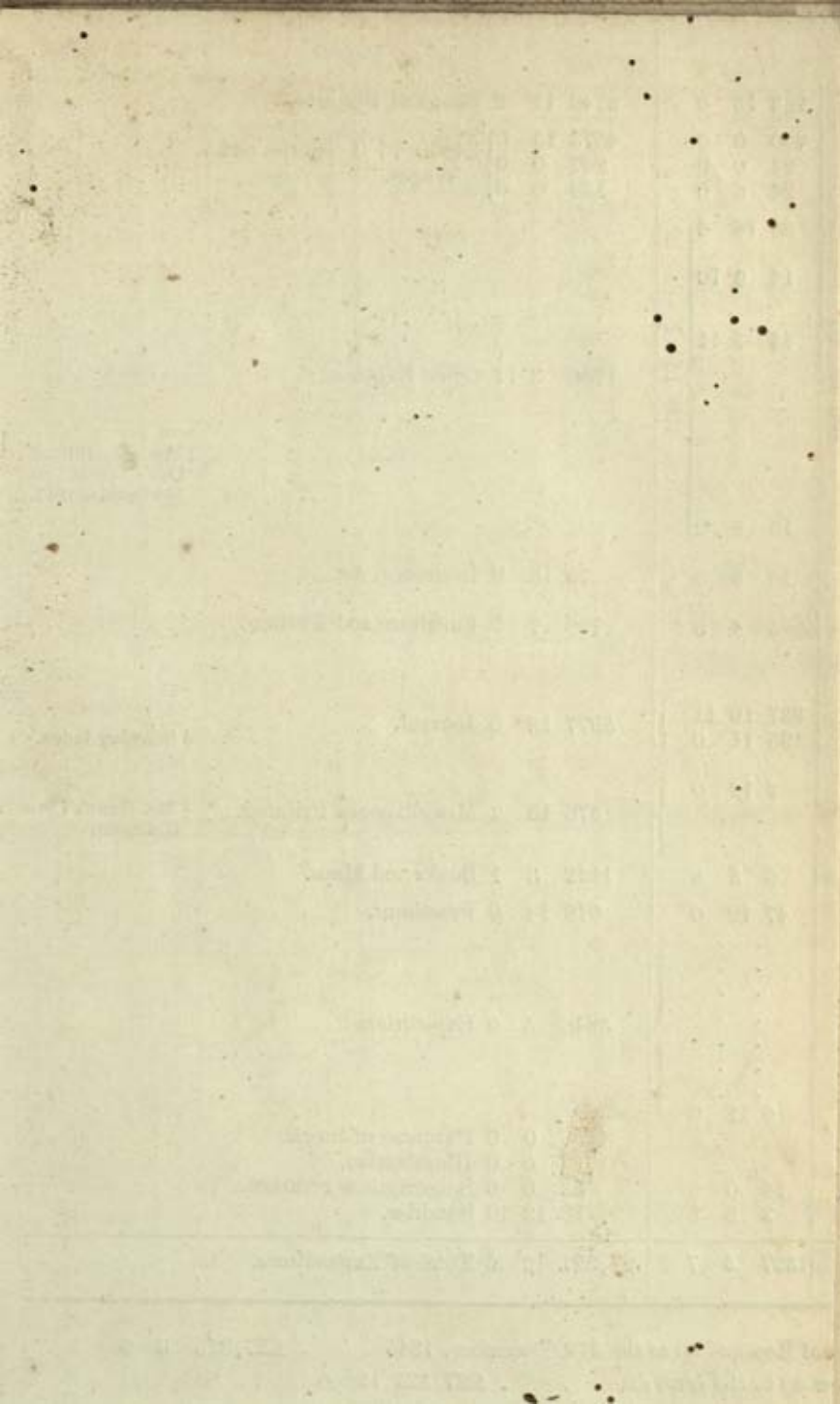
Dr.

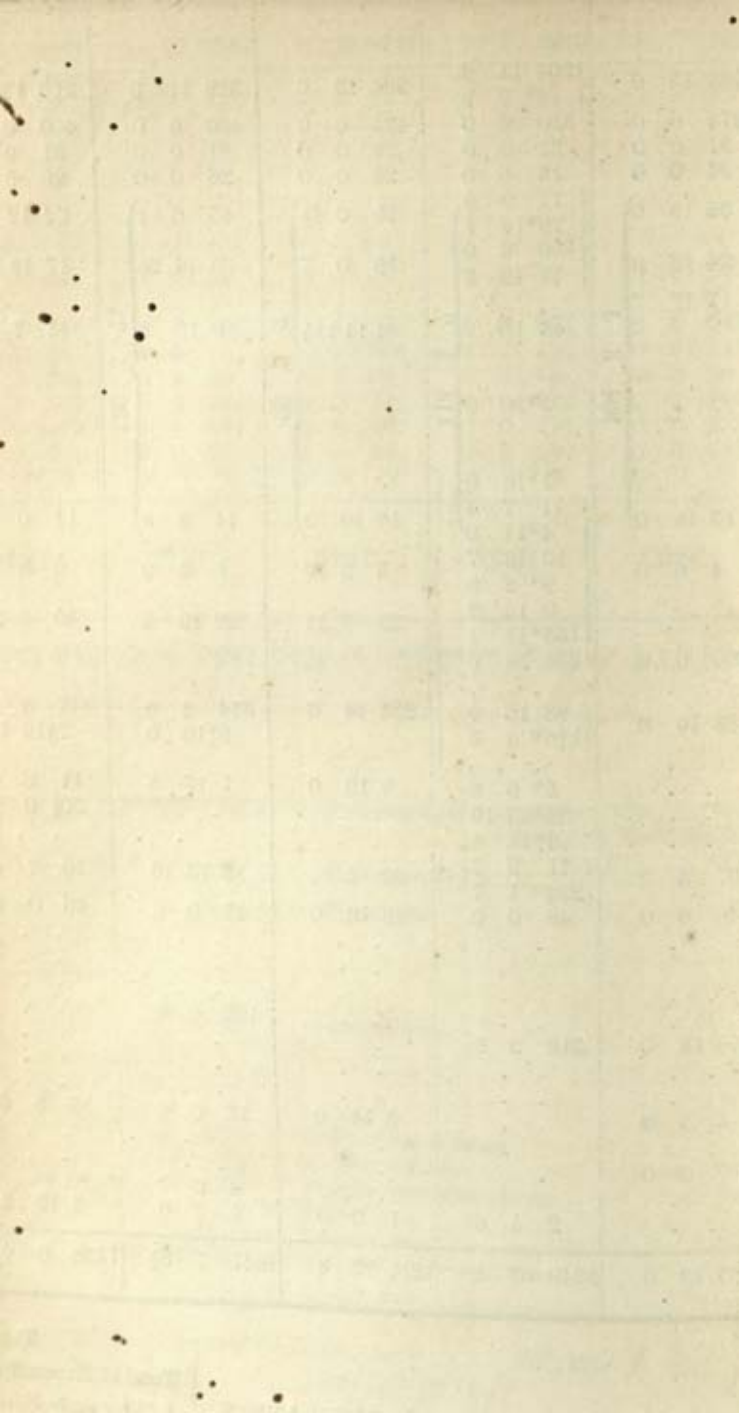
Cr.

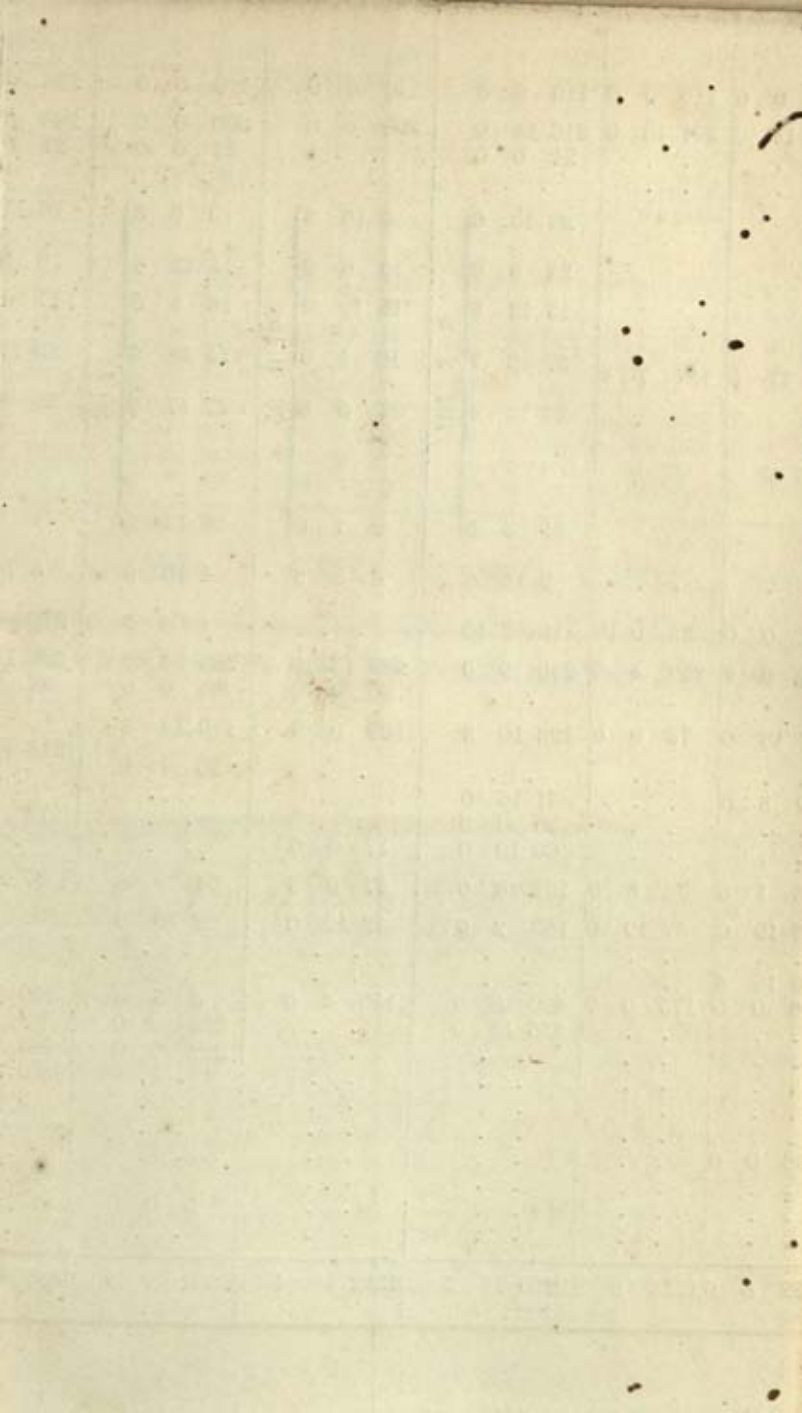
	£.	s.	d.		£.	s.	d.
Balance in the Banker's hands on the 1st of January, 1846	3	16	2	Rent and Fixtures			263 13 0
„ of Petty Cash in the hands of the Secretary	0	13	5	Salaries and Wages (Secretary, Editor, Librarian, Collector, and Messenger)			450 0 0
Probable Amount of Subscriptions, viz.:				Office Expenses, including Firing and Lights, Meetings, Stationery, Postages, Carriage of Parcels, Freight, &c.			100 0 0
Entrance of 45 Members at 3 <i>l</i> .	135	0	0	Insurance and Advertisements			5 0 0
Composition of 20 Members at 17 <i>l</i> .	340	0	0	Repairs and Fittings			5 0 0
Subscriptions of 300 Members at 2 <i>l</i> .	600	0	0	Journal			450 0 0
Arrears likely to be recovered	60	0	0	Miscellaneous Printing			5 0 0
Dividend on 2578 <i>l</i> . 4 <i>s</i> . 4 <i>d</i> . Stock, 3½ per Cents. Reduced,				Books, Bindings, &c.			10 0 0
Income-Tax deducted	81	7	0	Royal Premium			46 10 0
Royal Premium	52	10	0	Sundries			2 0 0
Journals sold	60	0	0				
Index sold	10	0	0				
	£1,343	6	7				£1,337 3 0

J. R. JACKSON,
Secretary.

No. of specimens		No. of specimens		No. of specimens	
1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36
37	38	39	40	41	42
43	44	45	46	47	48
49	50	51	52	53	54
55	56	57	58	59	60
61	62	63	64	65	66
67	68	69	70	71	72
73	74	75	76	77	78
79	80	81	82	83	84
85	86	87	88	89	90
91	92	93	94	95	96
97	98	99	100	101	102







A SUMMARY of the RECEIPTS and EXPENDITURE of the ROYAL GEOGRAPHICAL SOCIETY from its foundation in July, 1830, to the 31st December, 1845, inclusive.

A SUMMARY OF THE RECEIPTS AND EXPENDITURE OF THE ROYAL GEOGRAPHICAL SOCIETY FOR THE YEAR 1845.																		
RECEIPTS.	From the 14th July, 1830, to 31st March, 1832.	From the 31st March, 1832, to 31st Dec., 1832.	1833.	1834.	1835.	1836.	1837.	1838.	1839.	1840.	1841.	1842.	1843.	1844.	1845.	Amount of Principal Items.	Remarks.	
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.		
Entrance Fees of Members at 3d.	1350 0 0	36 0 0	111 0 0	129 0 0	66 0 0	117 0 0	117 0 0	195 0 0	189 0 0	180 0 0	66 0 0	54 0 0	60 0 0	108 0 0	144 0 0	2922 0 0	Entrance Fees.	This mark (*) denotes out-standing bills of previous years paid in 1841. † Including Index sold.
Compositions of Members at 17l.	2856 0 0	136 0 0	153 0 0	323 0 0	221 0 0	323 0 0	272 0 0	459 0 0	476 0 0	442 0 0	187 0 0	102 0 0	153 0 0	357 0 0	323 0 0	6783 0 0	Compositions.	
Annual Contributions at 2l.	858 0 0	144 0 0	424 0 0	440 0 0	408 2 0	416 2 0	434 2 0	514 2 0	534 12 0	564 5 0	548 0 0	514 2 0	511 9 0	509 1 0	529 2 0	7348 19 0	Annual Contributions.	
Arrears paid up			28 0 0			48 0 0	66 0 0	50 0 0	50 0 0	86 0 0	82 13 0	48 0 0	90 0 0	124 0 0	55 19 0	728 16 0	Arrears recovered.	
Dividends on Stock	122 10 0	140 0 0	148 11 0	162 15 0	168 0 0	168 0 0	168 0 0	168 0 0	168 0 0	157 10 0	127 15 0	108 12 11	97 6 6	87 12 2	81 7 0	2074 3 7	Dividends on Stock.	
Journals		67 12 2	1 1 0	150 0 0	165 1 1	112 2 0	98 13 8	128 17 6	161 1 7	185 1 2	139 8 5	71 11 6	78 8 6	127 9 0	73 9 5	1560 4 0	Journals sold.	
Sale of Copyright of Colonel Monteith's Map				100 0 0												100 0 0	Copyright of a Map sold.	
Royal Premium	52 10 0	52 10 0	52 10 0	52 10 0	52 10 0		105 0 0	52 10 0	52 10 0	52 10 0	52 10 0	52 10 0	52 10 0	52 10 0	52 10 0	787 10 0	Royal Premiums.	
Sale of Stock									296 5 0		1328 15 0		581 1 6			2206 1 6	Sale of Stock.	
Funds of Palestine Association			380 0 0	135 9 8												515 9 8	Funds of Palestine Assoc.	
From Government in aid of Expeditions					1000 0 0				300 0 0							1300 0 0		
From Christian Knowledge Society in aid of Expeditions.								500 0 0		250 0 0						750 0 0	2080 In aid of Expeditions.	
From Church-Missionary Society in aid of Expeditions									30 0 0							30 0 0		
Horticultural Society towards Repairs		10 0 0								8 0 0		50 0 0	50 0 0	50 0 0	52 0 0	10 0 0	Horticultural Society.	
Donations, various																210 0 0	Various Donations.	
Annual Receipts	£5239 0 0	586 8 2	1298 7 0	1492 14 8	2080 13 1	1184 4 0	1260 15 8	2067 9 6	2257 12 7	1925 6 2	2532 1 5	1000 16 5	1673 16 6	1415 12 2	1311 7 5	27,326 3 9	Total of Receipts.	
EXPENDITURE.																		
House Rent	165 0 0	82 10 0	110 0 0	110 0 0	110 0 0	110 0 0	110 0 0	110 0 0	235 0 0	263 13 0	204 11 3	263 13 0	329 11 3	263 13 0	263 13 0	2749 11 2	Rent and Fixtures.	
Salaries	157 10 0	78 15 0	249 5 0	319 15 0	321 16 0	316 14 0	300 0 0	300 0 0	280 0 0	275 0 0	350 0 0	425 0 0	400 0 0	400 0 0	400 0 0	4573 15 0	Salaries and	
Wages	19 1 3	19 1 3	19 17 6			21 0 0		21 0 0	21 0 0	21 0 0	21 0 0	21 0 0	21 0 0	21 0 0	21 0 0	247 0 0	Wages.	
Collector																139 0 0		
Messenger																		
Firing and Lights						26 10 6	6 16 8	10 6 3	16 11 0	36 18 0	11 9 6	19 0 4½	45 6 1	32 12 7	33 16 4			
Stationary						38 9 0	10 6 0	11 15 4	16 8 7	24 13 9	6 6 0	19 0 7	30 14 2½	17 18 3½	14 3 10			
Postages.						15 12 6	16 19 0	18 1 0	17 1 0	17 17 7	11 12 6							
Carriage of Parcels																		
Porterage						37 12 7	16 5 0	15 18 0	23 17 0	9 0 0	43 15 2	44 11 11½	39 16 8	45 7 9	45 5 11			
Attendance						22 14 4	17 0 8	17 17 0	12 8 0		3 10 0							
Housekeeper																		
Additional Clerk																		
Colouring and copying Maps																		
Instruments for Office																		
Evening Meetings						21 3 9	9 1 6	16 13 6	11 7 0	15 16 0	1 16 0	16 10 3	14 8 8	14 0 2	15 9 0			
Insurance, Advertisements, Power of Attorney, and Trans-fer of Stock						9 13 6	4 9 6	4 10 0	3 14 0	4 6 0	10 13 7	5 5 0	5 3 0	6 8 0	10 8 6	73 13 9	Insurance, &c.	
Furniture, Repairs, and Fittings	71 2 3	49 17 0	41 17 0	52 0 0	35 0 10	16 7 10		1 6 0	270 4 0		153 11 1	22 7 11	29 10 6	49 6 10	5 4 9	798 7 7	Furniture and Fittings.	
Journal			181 15 0	150 0 9	259 4 6	248 9 0	289 17 0	285 0 0	327 12 3	400 0 0	446 14 6							
Printing			86 10 0				90 0 0	24 0 0	42 7 6									
Reprints																		
Illustrations																		
Regular																		
Reprints																		
Miscellaneous Printing—as Cards, Circulars, &c.																		
Printing																		
Engraving																		
Books, Maps, and Bindings																		
Premiums, Medals, and Dies	52 10 0		105 0 0	52 10 0	52 10 0	162 2 0	52 10 0	62 10 0	101 0 0	46 0 0	46 0 0	46 10 0	47 0 0	46 0 0	47 12 0			
Expeditions																		
Arctic Land Expedition		50 0 0																
Outfit of Delagoa Bay Expedition																		
Guayana Expedition																		
South African Expedition																		
Kurdistan Expedition																		
White Nile Expedition and Abyssinia																		
New Zealand Expedition																		
Instruments for Travellers	11 14 0																	
Purchase of Stock	3657 10 0		472 10 0	296 0 0														
Amalgamations																		
Subscriptions returned	28 0 0																	
Books—as Christmas Gratuities, &c.																		
Annual Expenditure	£4627 5 5	394 1 3	1755 9 0	1582 6 0	1228 6 8	2260 15 3	1262 18 4	1682 9 9	2539 1 0	2000 18 0	2349 0 6	1211 12 8	1651 1 8½	1438 9 4½	1337 5 7	27,321 12 6	Total of Expenditure.	

3. Waterloo Place.

Made out by me this 16th day of April, 1846.

J. R. JACKSON,

Secretary, R.G.S.

RECAPITULATION.

Total of Receipts up to the 31st December, 1845	£27,326 3 9
Total of Expenditure up to the same date	£27,321 12 6
Add for early Error undiscoverable	0 1 8
Balance in hand on the 31st December, 1845	4 9 7
	£27,326 3 9

ACCESSIONS TO THE LIBRARY.

TO 25TH MAY, 1846.

EUROPE.

*Titles of Books.**Donors.*

- | | |
|--|--|
| FRANCE.—Tableaux de Population, de Culture, de Commerce, et de Navigation, formant pour l'Année 1842 la Suite des Tableaux insérés dans les Notices Statistiques sur les Colonies Françaises. Svo. Paris, 1846 | THE MINISTER OF MARINE. |
| — Pilote Français—Instructions Nautiques (partie des Côtes de France entre les Casquets et la pointe de Barfleur), environs de Cherbourg. Rédigées par M. Gevry. 4to. 1845 | MINISTER OF MARINE. |
| GREECE.—Peloponnesiaca: a Supplement to the Travels in the Moréa. By W. M. Leake. Svo. London, 1846 | COL. LEAKE. |
| ITALY.—Le Alpi che Cingo l'Italia considerate Militarmente così nell' Antica come nella presente loro condizione, parte primo. Vol. primo. Svo., with an Atlas. Torino, 1845 | General ANNIBALE DI SALUZZO. |
| — A Journey from Naples to Jerusalem. By Dawson Borrer, Esq. Svo. 1845 | DAWSON BORRER, Esq. |
| RUSSIA.—The Geology of Russia and the Ural Mountains. By R. I. Murchison, E. de Verneuil, and le Comte de Keyserling. 2 vols., 4to. 1845 | Sir R. I. MURCHISON. |
| — Mémoires présentés à l'Académie Impériale des Sciences de St. Pétersbourg. Par divers Savans. 4to. Vol. 4, liv. 6. 1845 | IMPERIAL ACADEMY OF SCIENCES, ST. PETERSBURGH. |
| — Recueil des Actes de la Séance publique de l'Académie Impériale des Sciences de St. Pétersbourg, tenue 29 Dec., 1844 | IMPERIAL ACADEMY OF SCIENCES. |
| — Statistik und Geographie des Gouvernements Kurland. Von Professor Possart. Svo. Stuttgart, 1843 | Dr. POSSART. |
| — Travaux de la Commission pour fixer les Mesures et les Poids de l'Empire de Russie. Rédigés par M. M. Kupffer. 2 v., 4to. St. Petersburg, 1841,—and Folio Atlas of Plates | M. KUPFFER. |

Titles of Books.

Donors.

- SARDINIA.—Dizionario Geografico—Storico degli Stati da Sardinia. 8vo. Fas. 51 and 52}
- SICILY.—Annali Civili del Regno delle due Sicilie : January to April, 1845. 4to. Naples} General VISCONTI.
- TUSCANY.—Dizionario Geografico, Fisico, Storico, della Toscana. Da E. Repetti. Vol. 5. Fas 9. 8vo.}
- Quadro Sinottico Statistico del Gran Ducato di Toscana} Count GRÄBERG DE HEMSÖ.

| ASIA.

- ASIA.—Journal of the Royal Asiatic Society. Vol. 16, Part 2. 8vo.} THE ROYAL ASIATIC SOCIETY.
- Journal Asiatique to May 1846} ASIATIC SOCIETY, PARIS.
- ALTAI.—Rapport sur un Mémoire de M. Pierre de Tchihatcheff, relatif à la Constitution Géologique de l'Altai. 4to. Pamphlet. 1845} M. DE TCHIHATCHEFF.
- ARABIA.—Ptolemy's Knowledge of Arabia, especially of Hadramaut and the Wilderness of El-Ahkaf. By W. Plate, LL.D. 8vo. Pamphlet. 1845} Dr. PLATE.
- BOKHARA.—Narrative of a Mission to Bokhara in 1843-45, to ascertain the fate of Colonel Stoddart and Captain Conolly. By the Rev. Jos. Wolff, D.D. 8vo. 1846} The Rev. Dr. WOLFF.
- BORNEO.—The Expedition to Borneo of H.M.S. Dido, with Extracts from the Journals of James Brooke, Esq., of Sarawak. By Captain the Hon. H. Keppell. 2 vols. 8vo. 1846} Capt. Hon. H. KEPPELL, R.N.
- CHINA.—A Letter from Hong Kong descriptive of the Colony. By a Resident. 8vo. Pamphlet. 1845}
- INDIA.—Note d'un Voyage nella Persia e nelle Indie Orientali 1841-42, di Gaetano Osculati. 8vo. Monza, 1844. Pamphlet} Count GRÄBERG DE HEMSÖ.
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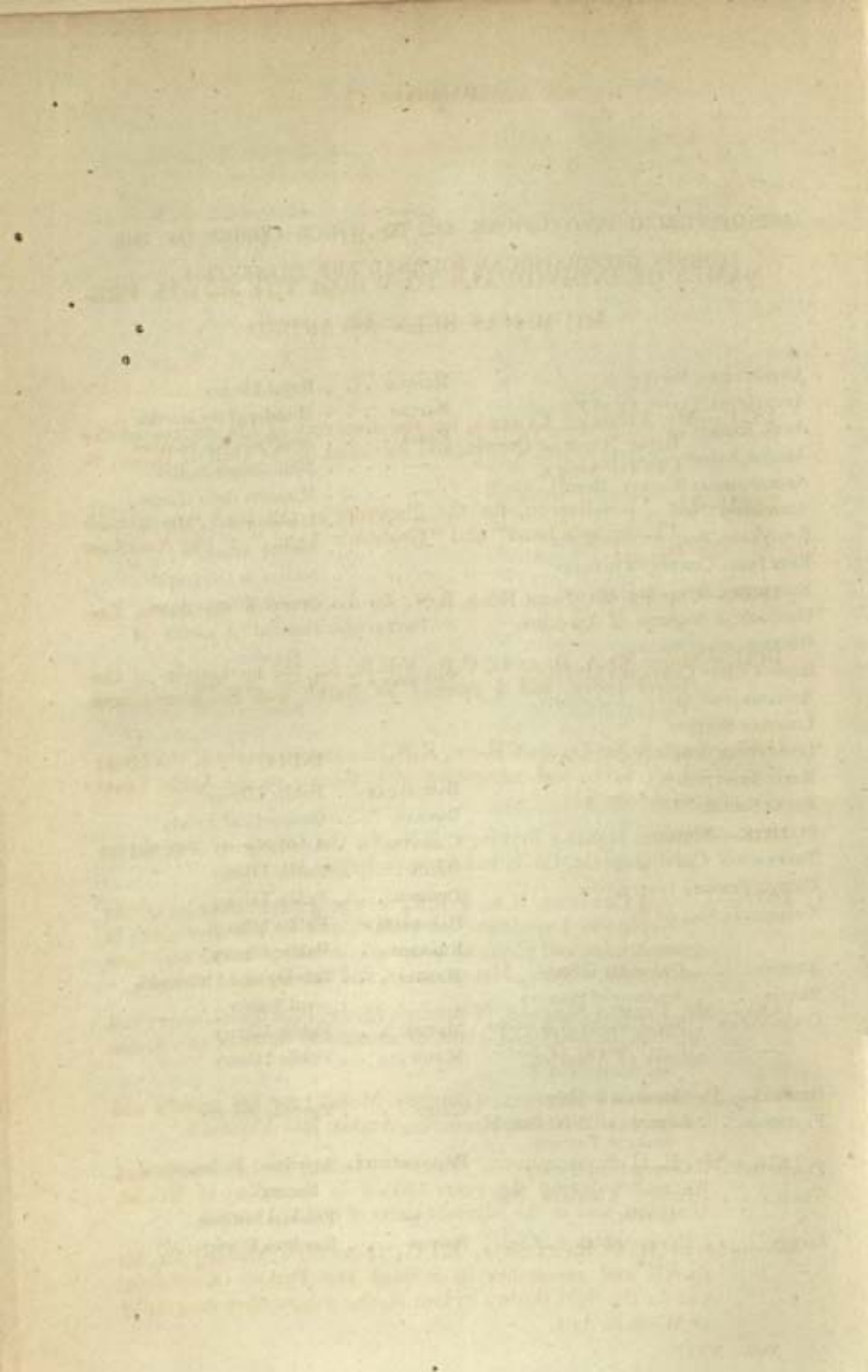
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MIUM HAS BEEN AWARDED.

- 1831.—Mr. RICHARD LANDER, for the discovery of the course of the River Niger or Quorra, and its outlet in the Gulf of Benin, in Central Africa.
- 1832.—Mr. JOHN BISCOE, for the discovery of the land now named "Enderby's Land" and "Graham's Land," in the Antarctic Ocean.
- 1833.—Captain Sir JOHN ROSS, R.N., for discovery in the Arctic Regions of America.
- 1834.—Major Sir A. BURNES, C.B., F.R.S., for the navigation of the River Indus, and a journey by Balkh and Bokhara across Central Asia.
- 1835.—Captain Sir GEORGE BACK, R.N., for the discovery of the Great Fish River, and navigating it to the sea on the Arctic Coast of America.
- 1836.—Captain ROBERT FITZROY, R.N., for the survey of the shores of Patagonia, Chile, and Peru, in South America.
- 1837.—Colonel CHESNEY, R.A., F.R.S., for the general conduct of the "Euphrates Expedition" in 1835-6, and for the accessions to comparative and physical geography relating to the countries of Northern Syria, Mesopotamia, and the Delta of Susiana.
- 1838.—Mr. THOMAS SIMPSON, [Founder's Medal.] for the discovery and tracing, in 1837 and 1838, of about 300 miles of the Arctic shores of America.
- Dr. EDWARD RÜPPEL, [Patron's Medal.] for his travels and researches in Nubia, Kordofán, Arabia, and Abyssinia.
- 1839.—Mr. R. H. SCHOMBURGK, [Patron's Medal.] for his travels and researches during the years 1835-9 in the colony of British Guayana, and in the adjacent parts of South America.
- Major H. C. RAWLINSON, E.I.C., [Founder's Medal.] for his travels and researches in Susiana and Persian Kurdistan, and for the light thrown by him on the comparative geography of Western Asia.

- 1840.—Lieut. RAPER, R.N., [Founder's Medal,] for the publication of his work on "Navigation and Nautical Astronomy."
- Lieut. JOHN WOOD, I.N., [Patron's Medal,] for his survey of the Indus, and re-discovery of the source of the River Oxus.
- 1841.—Captain JAMES CLARK ROSS, R.N., [Founder's Medal,] for his discoveries in the Antarctic Ocean.
- Rev. Dr. E. ROBINSON, of New York, [Patron's Medal,] for his work entitled "Biblical Researches in Palestine."
- 1842.—Mr. EDWARD JOHN EYRE, [Founder's Medal,] for his explorations in Australia.
- Lieut. J. F. A. SYMONDS, [Patron's Medal,] for his survey in Palestine and levels across the country to the Dead Sea.
- 1843.—Mr. W. J. HAMILTON, M.P., [Founder's Medal,] for his researches in Asia Minor.
- Prof. ADOLPH ERMANN, [Patron's Medal,] for his extensive geographical labours.
- 1844.—M. CHARLES RITTER, [Gold Medal,] for his important geographical works.
- Dr. BEKE, [Founder's Medal,] for his extensive explorations in Abyssinia.
- 1845.—Count P. E. DE STRZELECKI, [Founder's Medal,] for his extensive explorations and discoveries in the South-Eastern portion of Australia, and in Van Diemen's Land; and for his valuable work, in which he has consigned the results of his observations.
- Professor A. TH. MIDDENDORFF, [Patron's Medal,] for his extensive explorations and discoveries in Northern and Eastern Siberia.
-

PRESENTATION OF THE GOLD MEDALS,

AWARDED RESPECTIVELY TO COUNT P. E. DE STRZELECKI AND
PROFESSOR MIDDENDORFF.

THE President, LORD COLCHESTER, addressing the first of these gentlemen, said:—

“COUNT PAUL EDMUND DE STRZELECKI,—Your successful labours in the field of geography have been so frequently and so honourably mentioned in former addresses from this chair, that in now rising to state the reasons which induced the Council of this Society unanimously to bestow upon you one of its royal medals, I can do little more than recapitulate what has been already made familiar to the Society through the annual addresses of my predecessors. In the year 1841 we first learnt to estimate the value of your labours in the discovery of that extensive tract of New South Wales denominated Gipps's Land, containing an extent of 5600 square miles, a navigable lake and several rivers, and from the richness of its soil and pasturage, presenting an inviting prospect to settlers. In 1844 was announced to us your more arduous exploration of the southern portion of that range of mountains which extends from north to south along the eastern side of New South Wales, at no great distance from the coast, and are found continued in Van Diemen's Land. These mountains you traced continuously, on foot, from lat. 31° to 44° S., crossing them repeatedly, examining their character in detail, and ascertaining their mean height to be about 3500 feet.

“In the course of last year you have given to the public the result of your labours in the work entitled ‘Physical Description of New South Wales and Van Diemen's Land,’ comprehending the fruits of five years of continual labour during a tour of 7000 miles on foot. This work, treating, within a moderate compass, of the history and results of the surveys of those countries, of their climate, their geology, botany, and zoology, as well as of the physical, moral, and social state of the aborigines, and the state of colonial agriculture, the whole illustrated by comparisons with other countries visited by yourself in the course of twelve years' travel through most of the regions of the world, is a most valuable addition to our knowledge of this interesting portion of the globe; and together with the beautiful geological map, constructed by yourself, and now exhibited before us (a reduction of which illus-

trates your work), and the energy and perseverance required to produce these results proclaim a geographer of no ordinary merit, and form the grounds on which has been awarded to you the medal of our royal founder, which I have now, in the name of the council, the pleasure to present to you."

Count Strzelecki, in reply, said:—

"MY LORD,—I receive and accept, with the deepest emotions of honest pride, the medal which the Council of the Royal Geographical Society has condescended to award to me this day; and I beg of you, my Lord, to make allowances for the difficulty I labour under in speaking of myself, and particularly in answering in phraseology such as I could wish to the very flattering terms with which you have been pleased to accompany that award.

"This, my Lord, is the third time that the Royal Geographical Society has done me the unexpected and undeserved honour of noticing my humble labours. At the anniversary meetings in 1844 and 1845 that zealous and unwearied votary of science, Sir R. Murchison, then president of the Society, in his two annual addresses, delivered in this room, directed, in terms of the greatest liberality, the public attention to those labours then being printed. On the present anniversary the Society, through your Lordship, awards for them the highest reward which it has at its disposal: and although in these several instances I cannot trace my good fortune to other sources than to the kindness and generosity of the council; still, to be the object of such sentiments on the part of one of the most enlightened and respected societies in Europe, is, I must confess, the greatest and brightest honour that I could ever expect in this adopted home of mine."

"But whilst attempting to express how deeply and gratefully I am impressed by the flattering manifestations of your Lordship's condescension and kindness towards me, I cannot repress the delight I feel at seeing that the Royal Geographical Society, in awarding medals to such men as Erman and Ritter, identifies itself more and more with the patronage and promotion of the philosophical knowledge of the earth, such as it is exhibited by the combined application of practical astronomy, geometry, physics, positive geology, mineralogy, botany, and zoology. Indeed the Royal Geographical Society must be regarded henceforth as the centre from which radiates encouragement to these sciences, and as the common focus to which their contributions to the knowledge of the habitable world converges. The branches of that knowledge, though different *per se*, are nevertheless, when applied to physical geography, as intimately linked together as are the phenomena in the economy of nature herself, and indeed such is their close connection and mutual dependence, that in my humble contributions now before you, it was impossible for me to do justice to the subject of the climatology of New South Wales and Van Diemen's Land without first minutely investigating the horizontal and vertical configuration of the land, its geology, its flora, and the physical and chemical character of its soils.

* Count Strzelecki, by birth a Prussian, has been naturalized as a British subject.

"That contribution, however, to which I allude, combining only such information as we possess concerning New South Wales and Van Diemen's Land, and showing the advantages and the need of more, is but a fragment of those researches which I have carried round the world. Should my health allow me to cope successfully with the evils of a sedentary life, I shall be but too proud to lay before the Royal Geographical Society further results of those researches, and thus justify perhaps the generous sentiments with which your Lordship and the Geographical Society have this day honoured me."

The President then addressed the meeting in these words:—

"GENTLEMEN,—The very remarkable travels of Professor Middendorff in the northern and eastern extremities of Siberia have been so fully commented upon by my predecessor, Sir Roderick Murchison, in two anniversary discourses addressed to this Society, that I have simply to recall your attention to the eulogiums then passed on this original explorer, to satisfy you that the Council has well performed its duty in selecting him to receive one of our Royal medals.

"When we look to the great results of Professor Middendorff's long and laborious expeditions, carried out under the severest privations, whether when in surveying by land the great headland of Taimyr, and the region of the Yenesei, he threw light on the Boreal range of vegetation, and on the intricate question of the frozen soil and subsoil of Siberia; or, that we turn to the hitherto untrodden lands which he traversed on the coasts and islands of the sea of Ochotsk, or along the extreme northern boundaries of China; or again, if we consider the vast accessions to knowledge which he has afforded by the natural productions, both fossil and recent, which he brought back with him; and, above all, when it has been announced that his triumphal return to St. Petersburg created in that capital so much enthusiasm for our science, that an Imperial Geographical Society was thereon founded, and upon the model of this Society, I feel confident that all British geographers will rejoice in seeing that we pay our just tribute to so ardent and so enlightened an explorer of wild lands, whose outlines, and whose nature were previously almost unknown to us."

Then turning to Sir R. Murchison, he continued:—

"SIR R. MURCHISON,—In delivering into your hands the medal of our Royal Patron Her Most Gracious Majesty, awarded to Professor Middendorff, it gives me sincere pleasure that, in looking for a proper representative of that gentleman, it was not necessary to go out of our own body to find a member of the Imperial Academy of Sciences of St. Petersburg, and a man of science, whose distinguished merits are publicly recognised in that country equally as in his own. You will, I am sure, feel gratified in conveying to Professor Middendorff this token of the value placed upon his labours by the Society."

Receiving the medal for Professor Middendorff, Sir R. Murchison replied:—

"MY LORD,—I thank you sincerely for making me the medium of communication with Professor Middendorff on this occasion, since I am

enabled to declare my opinion that the Royal Geographical Society never made a juster award of its Victoria medal than by conferring it on the enterprising and modest Professor of Kief, for his extraordinary and successful labours in extending our knowledge of the geography and natural history of northern and eastern Siberia.

"Professor Middendorff may well feel proud of the distinction, as he is the first Russian subject who has been similarly honoured; and I hesitate not to express my conviction that this award will raise that distinguished naturalist still higher in the estimation of his countrymen, and may lead the Imperial Government to sanction the strong wish which he entertains to visit England, and compare the results of his researches with those of British geographers."

ADDRESS

TO THE

ROYAL GEOGRAPHICAL SOCIETY
OF LONDON;*Delivered at the Anniversary Meeting on the 25th May, 1846.*

BY THE

RIGHT HON. LORD COLCHESTER, CAPT. R.N., &c.,
PRESIDENT.

GENTLEMEN,—In compliance with the custom established by my learned predecessors in this chair, it now becomes my duty to endeavour to place before you the progress made in geographical knowledge during the past year; and although this period may not have been distinguished by any important discoveries, yet we shall find a steady advance in the more exact examination of countries already known to us, as well by the prosecution of scientific surveys under the direction of their Governments, as by the explorations of private individuals; and expeditions are in progress which, if blessed with success, may add materially to our knowledge of regions hitherto untrodden by civilised man, and perhaps solve questions of geography long the subject of inquiry and debate. I allude more particularly to the projected journeys of Mr. Duncan and Lieutenant Ruxton in Africa, of Mr. Brockman in Southern Arabia, of Captain Sturt's and Dr. Leichhardt's exploration of the interior of Australia; and to the expedition under Sir John Franklin, to demonstrate the practicability of a north-west passage from the Atlantic to the Pacific Oceans, an expedition in the success of which we must all take so deep an interest.

But before proceeding to details, I must pause for a moment to pay our tribute of respect to the memory of those of our members, distinguished for their exertions in the cause of science, as well as of eminent foreign geographers, who have been taken from us during the past year. Happily the list is small.

OBITUARY.

Hugh Murray, Esq., the first to whom I must allude, was one of the most distinguished members of our Society for his zeal and industry in the cause of geographical science. His first work was an enlargement and completion of 'Dr. Leyden's Historical Account of Discoveries and Travels in Africa,' which appeared in 1817. He next published 'Account of Discoveries and Travels in Asia;' this appeared in 1820; and nine years afterwards was followed by 'Discoveries and Travels in America.' His great work, however, and that on which his fame will chiefly rest, was his 'Encyclopædia of Geography,' which appeared in 1834. The geographical portion of this is understood to have been written entirely by himself, and would therefore be alone a sufficient monument of the extent of his reading and research, and of his indefatigable industry; but his exertions stopped not here; more than 15 volumes of Oliver and Boyd's 'Edinburgh Cabinet Library' were either partly or entirely written by him; as the History of British India, the Account of China, of British America, and of the United States. For the same work he wrote the historical part of the Polar Seas and Regions, the descriptive account of Africa, and an enlarged edition of the travels of Marco Polo. Mr. Murray was also a Fellow of the Royal Society of Edinburgh.

Henry Gally Knight, Esq., M.P. for South Notts, another of our members, was distinguished by his love of the fine arts. In early life, when war in Europe and the unsettled state of the East rendered foreign travel a work of danger as well as difficulty, Mr. Gally Knight spent more than two years in visiting Spain, Sicily, Egypt, Syria, and Greece; and later in life he visited Normandy, Italy, and again Sicily, with a view to ecclesiastical architecture, especially that of the Normans, and his work entitled the 'Normans in Sicily,' and still more that on the 'Ecclesiastical Architecture of Italy from the Time of Constantine to the 15th Century,' are monuments of his liberality as well as of his taste. Mr. Gally Knight was also a member of the Royal and Antiquarian Societies.

Of foreign geographers, we have to lament the loss of Mr. David Warden, one of the founders and most zealous supporters of the Geographical Society of Paris. Mr. Warden was a man of deep and varied learning, and the author of several original works; among the principal of which may be named 'An Account of the United States of North America, published in English, French, and German;' 'An Account of the Antiquities of North America,' and a similar work on Mexican Antiquities.

Admiral Otto von Kotzebue, the Russian circumnavigator, has lately died at a very advanced age; and we have finally to deplore the early

loss of Dr. Herman Bobrick, of Königsberg, in Prussia, who had just given earnest of important labours in the field of ancient geography, by his publication on the geography of Herodotus.

ENGLISH PUBLICATIONS.

Sir John Barrow, to whose early exertions the existence of our Society is so much indebted, and with whose various works you are all well acquainted, has just added to their number by an interesting account of the Voyages and Discoveries within the Arctic Regions, a subject with which no one can by possibility be better, if so well, acquainted. We learn with satisfaction that Dr. Falkenstein, of Dresden, one of our learned honorary members, is about to make known Sir John Barrow's work to his countrymen, by translating it into German.

Mr. Frederick Parrott's journey to and ascent of Mount Ararat, forming the 1st volume of the 'World Surveyed in the 19th Century,' has also appeared, and displays the critical ability and industry of its editor, Mr. Cooley, to whose undertaking, for the sake of science, we wish every success.

Since our last anniversary has also appeared the great work of Sir R. I. Murchison, M. E. de Verneuil, and Count A. Keyserling, on the Geology of Russia in Europe and the Ural Mountains. Although this work is principally directed to the consideration of another science than that which we here profess, and one on which I should feel myself quite incompetent to dilate, yet the value of this production as a work containing many important facts belonging to physical geography, properly so called, and as a proof of the energy of its authors in the prosecution of their researches, would render it inexcusable in me if I had omitted to recall your attention to it, more especially as it reflects honour on ourselves, proceeding in great part from an actual President of this Society.

Other works have also been published here, some of which I shall notice when speaking of the countries to which they relate.

OUR OWN LABOURS.

With regard to our own proceedings, I will enumerate the papers that have been read at our evening meetings since the last anniversary, some of which have already been published in our Journal.

On the geography of *Asia* you have heard the very detailed description of the province of Khúzistán, in Persia, a document of great interest, both from its account of the several tribes inhabiting that part of the country and from its minute geographical details of a province to the very heart of which a British steamer, the *Assyria*, under the command of Lieutenant W. B. Selby, I.N., has been navigated, and which, from

this circumstance and the proximity of our own territory in the East, may at some future time prove of great importance.

With regard to *Africa*, the greater part of the information we have received has been with reference to the West Coast; thus you have heard an abridgment of the account given by Mr. Wm. Cooper Thomson, of his journey from Sierra Leone to Timbo, the capital of Fulah Jallo—an account which sets forth in the most striking manner the treacherous character of the coast Mandingos, and the obstacles which, from jealousy and interested motives, they throw in the way of those European travellers who would pass through their country into the interior.

Descending southward, we come to Ashantee and Dahomey, the scene of Mr. Duncan's explorations, and from that bold pioneer we have received two communications, to which you have listened with much interest; the first describing his journey from Cape Coast to Whyddah, and the second relating the unexpected feat by which he succeeded in travelling from Whyddah through the Dahomey country to Adofoodiah, a town placed by him in $13^{\circ} 6' N.$ and $1^{\circ} 3' E.$ Mr. Duncan is now preparing to set out on a fresh journey from the coast, expecting to be able to penetrate to Timbuctoo, and from thence descend the Niger to Rabbah, thus completing what remains unknown of the course of that river.

From Lieutenant Ruxton you have had an account of his visit to Ichabo and his land journey on the neighbouring coast. Short as untoward circumstances rendered this traveller's operations, he still had time to improve our maps by the expunging from them of what is laid down as the Fish River, running into Angra Pequena, and which has no existence. The detailed account of Lieutenant Ruxton's short and all but fatal trip, is inserted at length in the 'Nautical Magazine for January.' Lieutenant Ruxton is about to start again on a second attempt to penetrate from the western coast of Africa, quite across the continent to its eastern coast; and, as Her Majesty's Government have referred to this Society for its opinion of the advantages of such an exploration, and the Council have forwarded in reply their strong opinion in its favour, we may hope that Mr. Ruxton will receive such a sanction of his proceedings as will facilitate his proposed undertaking.

On this same west coast of Africa the geography of the Jamoor river has been corrected by a note and plan of Mr. John Clark, communicated to us by Mr. Joseph Angas, while Captain Grover has favoured us with an account of the Island of Arguin, and excited your lively interest in the fate of our countrymen captured by its ruthless pirates.

With regard to the south-eastern coast of Africa, Mr. Cooley, with his accustomed ability, has endeavoured to settle the question of the geography of Nyassi, or the Great Lake of Southern Africa. As this paper

has now been some time in your hands, I need say no more respecting it than that, considering the imperfect data from which Mr. Cooley had to draw his conclusions, and from the ambiguity and confusion of the statements he had to reconcile, he has arrived at a conclusion which, if not absolutely correct when first made, has, by subsequent *éclaircissements* furnished by him, been rendered quite satisfactory. A lengthened review of this dissertation has already appeared in the '*Nouvelles Annales des Voyages*,' for last November.

You have heard Mr. Peter Masters's account of the *Gulf of Mexico* and of the navigation of the river *Tobasco*, as also his description of *Tampico* and of the towns in its vicinity; a most valuable document, as containing the observations of a practical man on the currents of the gulf: an object of such importance to our navigators, that that particular portion of Mr. Masters's memoirs was communicated by us to the '*Nautical Magazine*,' where it was presumed it would be seen by a greater number of mariners.

In *North America* we have been enabled, by a paper of Mr. Isbister, to give a sketch of *Peel river*, by which you have been informed not only of the nature of that river but also of the geological character and the productions of the extreme northern portion of the *Rocky Mountains*.

On the subject of *Australia*, you have heard Mr. Eyre's reasons against the supposed existence of a great inland sea, reasons which though specious are hypothetical, and for that reason have not been yet admitted to a place in our journal; and we may hope that the undaunted zeal of Captain Sturt may be rewarded by enabling him to throw more light on this important question in the journey which he is still prosecuting with such unwearied energy.

Of the tribes inhabiting the northern coast of *Australia* Mr. W. Earl has given you some interesting notices, which in due time will appear in print. The same gentleman has already enriched our last volume with his account of the physical structure and arrangement of the islands of the *Indian Archipelago*; and from Captain Sturt you have had a statement of his explorations as far as the 28th parallel in 141° 45' E. Finally, Lieutenant Christopher has endeavoured to explain the phenomena of coral islands and reefs in a paper which has been read to you; and Lieutenant Spratt has furnished a short but interesting article of ancient geography, confirming the history of the canal of *Xerxes* across the isthmus of *Mount Athos*.

MARITIME SURVEYS.

HOME.—The importance to the world in general, and to our own country especially, of maritime surveys, entitle them to the first place in our consideration.

Commander Sheringham, in H.M.S. *Dasher*, is still proceeding with his elaborate and beautiful survey to the westward of the Southampton Water, and out to the Needles and Shingles.

Captain Bullock, in H.M.S. *Porcupine*, is completing the examination of the Downs, having already demonstrated the singular fact that the long sand called 'The Brake,' has moved bodily to the westward. When the weather is unsuitable to sea-work, he occasionally prosecutes the examination of those rivers on the Essex coast which are connected with the former survey of the Thames.

Captain Stanley, in H.M.S. *Blazer*, has been sedulously at work during the winter, and has finished the plans of the rivers Stour and Deben. When the season opens he will gradually proceed with the survey of the great banks of the North Sea.

Commander Otter, in H.M.S. *Sparrow*, having completed the N. coast of Scotland to its western extremity, Cape Wrath, in spite of the inclement weather which pervades all that forbidding region, will now proceed in continuation to survey the W. coast of Scotland with the Isles of Skye and Lewis.

Mr. Thomas, in H.M.S. *Mastiff*, is slowly but accurately advancing with the survey of the Orkney group of islands, which the severity of the climate and the continual gales of wind render a work of more than common difficulty and labour.

Commander Robinson, in H.M.S. *Shearwater*, is still in the river Clyde and its adjacent lochs, but will soon proceed towards the Mull of Cantire.

Captain Beechey, in H.M.S. *Firefly*, having made an admirable survey of the northern portion of the Irish Channel, is rapidly drawing that of its southern division towards a conclusion.

Commander Frazer, in H.M.S. *Lucifer*, having carried his excellent survey of the E. coast of Ireland as far to the southward as Wexford, with all its dangerous outlying banks, is about to proceed round the S.E. angle of the island, to the examination of the Saltees group of islets and the coast near Waterford.

Commander Wolfe, having done full justice to the estuary of the Shannon and to the Bay of Bantry, as well as to the harbours of Kinsale and Cork, is now going to undertake the connecting intervals of coast between all those places.

Commander Bedford and his party, in hired vessels and boats, are prosecuting the survey of Galway Bay and the deeply indented coast to the northward.

Lieutenant Beechey is actively employed in the survey of the great navigable lakes of Corrib and Mask in the county of Galway, which it

is to be hoped will still further increase the powerful means of inland navigation that Ireland already possesses.

Lieutenant George Williams, in hired boats, is about to commence a detailed survey of the coast and harbours of the Isle of Man, which from its position between the great ports of Belfast, Glasgow, Liverpool, and Dublin, has not unaptly been called the "Beacon of the Irish Sea."

FOREIGN.—Commander Graves, in the *Beacon*, with Commander Brock, in the *Bonetta*, are revising some of the surveys on the western side of the Archipelago, and are daily adding not only to the resources of the seaman and to the precision of modern geography, but to the materials of the antiquary on those classic and interesting shores.

Captain Bayfield, in the schooner *Gulnare*, is still proceeding with his important survey of the Gulf of St. Lawrence, and is directing his high talents and indefatigable labours to its southern shore, and to the channels and dangers round Prince Edward's Island.

Captain W. F. Owen, in *H.M.S. Columbia*, is actively prosecuting his survey on both sides of the Gulf of Fundy, and for 60 miles up the river of St. John, on a lake connected with which he measured a base upon the ice of 10 miles in length, which will be available for any future surveys of the interior.

Commander Barnett, in *H.M.S. Thunder*, with Lieut. Laurance, in *H.M. schooner Lark*, are persevering with their usual energy in surveying the coasts and dangers of the Gulf of Campeche, and along the shores of the Gulf of Mexico.

Captain Sullivan, in *H.M.S. Philomel*, having completed the survey of the Falkland Islands, which contain some of the finest harbours in the world, the arduous task was assigned to him of correcting the notoriously defective hydrography of the River Plate; but the hostilities which have commenced between the French and English forces and those of the Argentine Republic have lately given him an opportunity of distinguishing himself and his gallant crew in an equally honourable career at the battle of Obligado, on the right bank of the River Parana.

Captain Sir E. Belcher, in *H.M.S. Samarang*, Captain Collinson, in *H.M.S. Plover*, and Lieutenant Bate, in the *Young Hebe*, have been contributing most essentially to the extension of our hydrographic acquaintance with the important region of the China Seas, and therefore to the facility with which our mercantile navy will now be able to approach the several ports to which access was conceded by the late treaty. They are now returning home for a short relaxation from their labours, and with a harvest of knowledge such as it has seldom been the lot of any labourers to reap so rapidly and so well.

Captain Blackwood, in H.M.S. Fly, with Lieutenant Yule, in H.M. Cutter Bramble, have been for some time engaged in the survey of that prodigious line of coral rocks which have been well named the Barrier Reefs, intervening between Australia and the Pacific Ocean, and which almost forbade any approach to Torres Strait, the only direct communication with India. And, moreover, with the assistance lent them by Sir G. Gipps, they have erected a conspicuous stone beacon on an outlying rock, in order to mark the safe but narrow pass through the Barrier, called Raine Island Channel. Of the navigation between this reef and the S. coast of Australia, I shall have occasion to speak more fully.

Captain Kellett, of H.M.S. Herald, and Lieutenant Wood, of H.M.S. Pandora, have taken up their survey of Western America at Guayaquil, and will continue it to the northward, along the coasts of Granada and Guatemala; but no accounts of their proceeding have yet reached the Admiralty.

Commander Denham, in H.M.S. Avon, is just commencing the survey of the interval between Cape St. Paul and the River Nun, in continuation of Captain Vidal's operations of 1838.

Ordnance Geological Survey.—The Geological Survey of the United Kingdom, which was formerly connected with the Ordnance, but since the spring of last year has been placed under the Chief Commissioner of Woods and Works, is still going on under the able and zealous direction of Sir H. de la Beche. Independent of Cornwall, Devonshire, and a part of Somersetshire before completed, there has just been published that part of the country comprised in Plates 35, 36, 37, 38, 39, 40, 41, 42, and 43, of the Ordnance Survey; that is, Pembroke-shire, Caermarthen, Brecknock, Glamorgan, Monmouth, with parts of Hereford, Gloucester, and Somerset. A much larger portion is now being surveyed, besides which good progress has been made in the S.E. of Ireland.

EUROPE.

FRANCE.—One of the most important Geographical works published by our neighbours across the Channel is unquestionably the '*Histoire des Découvertes Géographiques*, by M. Vivien de Saint Martin.' The Herculean task which M. de Saint Martin has set himself is a work which, when completed, will form 45 octavo volumes, published in 90 *livraisons*, accompanied by an Atlas of about 100 maps engraved on steel. The second and third *livraisons* have just been published, and kindly presented by its author to our Library. The first part, which will contain the General Introduction to the work, is not yet quite ready for publication, but is expected to appear shortly.

If the limits to which I must necessarily confine myself, permitted of my giving anything like a detailed notice of any particular work, none certainly would have a more just claim to your attention than the one in question. A complete history of voyages and discovery, written in the spirit in which M. V. de Saint Martin has conceived it, was a desideratum in European literature, and if successfully concluded, as it has been admirably begun, I know of no work which will reflect greater honour on its author and his country. As in all things, the experience of the past is the best guide for the future, so nothing can more surely direct us in our subsequent researches regarding our globe and its inhabitants than a perfect acquaintance with the gradual steps by which we have arrived at our present knowledge. He, therefore, who presents us with a well ordered relation of the several events by which the amalgamation, considerably advanced, though still incomplete, of the several nations of the earth and their various interests, has been so far effected, is entitled to the gratitude of all who, by the study of the past, would prepare themselves efficiently as future labourers in the great work of universal civilization. We most sincerely hope that M. de Saint Martin may not only live to complete his great undertaking, but to reap that just meed of gratitude and applause to which he will be so justly entitled, if (as we have said) he carries out his great undertaking as he has begun it.

The '*Nouvelles Annales des Voyages*,' Fifth Series, edited by M. Vivien de Saint Martin, is a publication well deserving of your attention. This work contains a Geographical Review, Memoirs and Documents, Critical Analyses, and Geographical Miscellanea. The Reviews are able condensations, the Memoirs and Documents generally interesting, and the Analyses impartial, if we except here and there a national leaning, very excusable, towards the works of the editor's countrymen. Upon the whole, it is a periodical of considerable merit, and, as keeping pace with the progress of our science and its cognate objects, will be found highly interesting to all geographers.

SPAIN.—Considering the unsettled state in which Spain has unfortunately been for so long a period, we can hardly expect to hear of the development of scientific exertions; nevertheless we notice with pleasure the publication of the first volume of Madoz's '*Geographical and Statistical Dictionary*,' the first work of the kind which has appeared in Spain. The author, we are told, has conquered almost insurmountable difficulties, and produced a book worthy of praise and attention.

There has also appeared a large quarto volume, of 1000 pages, on the Geography, History, Statistics, and Picturesque Scenery of Spain,

accompanied by numerous engravings, and which has been well received by the Spanish public.

There is announced as to be published by a society of savans, a Universal Dictionary of Ancient and Modern Geography, of Sacred and Political History, and Mythology. The Spanish geography, which goes under the name of 'Letronne,' is, in fact, our correspondent informs us, Balbi's geography, the translator having principally used the latter. It is by D. Francisco de Paula Mellado, D. Joaquim Perez Comoto, and D. Francisco Fernandez Villabrille.

ITALY.—From our excellent foreign member, Count Graberg, of Hemso, we learn that the great Physical, Historical, and Statistical Chorography of Italy, of Signor Attilio Zucagni Orlandini, which is mentioned in the last Address as almost completed, is now really terminated. It forms 18 large octavo volumes, with an atlas in folio, containing 144 chorographical maps, and 262 illustrations and statistical tables. The Count vindicates the character of this work from the criticism passed upon it, and mentioned in the last address on the faith of another of our correspondents. It is evident that as regards works with which, from not having them, we are not personally acquainted, we must rely for a notice of them on the judgment and presumed impartiality of those who, being upon the spot, and whose ability cannot be disputed, we are authorized to consider as authorities. Whenever, as in the present case, the opinion of local critics differ, we have no resource but to give the statements of both: thus, Count Graberg says, "Whoever will impartially examine, as I have done, the whole work minutely, will find that its peculiar merit is its extreme exactness and conscientious precision with respect to the facts stated, which are always derived from authentic sources; while for clearness of expression, purity of diction, and correctness of style, it is no less remarkable; but above all, the author is deserving of praise for having introduced into this kind of scientific writing the most suitable and convenient distribution of the subordinate parts; in short, Orlandini and Repetti are, for the topography of Tuscany and the chorography of Italy, what the indefatigable Marmochi has been for 'The Universal Geography and for the General and Comparative Natural History of Italy,' of which three more parts have been published in the course of the last twelve months."

At Milan, Signor Casalis's 'Geographical Dictionary' is still going on.

Dr. Bernardino Biondelle is just on the point of publishing the first volume of his 'Essay on the Gallo-Celtic Dialects;' a work, says our correspondent, "which will no doubt render great service to the study of ethnography and linguistics, and enable us to proceed with certainty in our inquiries concerning the original occupants of our country."

At Brescia there has lately appeared the first, and by this time probably the second and last, volume of a work of Classical and Ethnological Geography, the fruit of the joint labours of four distinguished professors of Brescia—the Cavaliere Salari, Professor Nicolini, the architect Vantini, and the Cavaliere Labus, the antiquary, under the title of ‘Illustrations of the Museum at Brescia.’

At Bologna, the Advocate Signor Carlo Monti has published a learned memoir, entitled ‘A Topographical Enquiry respecting the Shortest Road between the two Seas in Ancient Italy,’ which appears to be (to have been?) by Pisa, Lucca, San Marcello, Poretta, Vergato, Bologna, Ferrara, Rovigo, Monsiliar, Padua, and Venice.

Mancini has published a new edition of Gardner’s ‘Great Planisphere.’

Of Mastriani’s ‘Geographico-Historico-Civic Dictionary of the Two Sicilies,’ we have not heard of the publication of any part beyond the 26th.

Count Annibal Ranuzzi’s ‘Geographical Annual for 1845,’ a work which at once gives proof of the zeal of the Italians for the study of geography, and contributes largely to the advancement of every branch of geographical science, has been continued with the happiest results. Among more than forty papers by distinguished men of letters on various subjects connected with the geology, history, statistics, topography, and physical and descriptive geography of Italy, I may mention, as peculiarly deserving of perusal, Captain Joseph Brupachu’s observations on the Geographical maps and the Euganean mountains; Major Giovanni Carbonazzi’s account of the works of public utility now in progress in the Island of Sardinia; Dr. Zuccagni Orlandini’s judicious remarks on the extraordinary discrepancy between the different estimates of the superficial measure of Italy, which fluctuates between 58,000 and 96,500 square geographical miles. But on a careful computation from the best data, he finds that it cannot amount to less than 96,179 square geographical miles—an estimate, we may remark, but little below that made by our learned correspondent, Signor Adrian Balbi, in the first edition of his *Compendium of Geography*; Dr. Carlo Frulli’s summary on the Physical Geography of Italy; Captain Orestes Brizi’s notice of the Republic of San Marino; Colonel Vincent Degli Uberti’s short but comprehensive Memoir on the Port of Brindisi, the ancient Brundisium; and General Ferdinand Visconti’s very valuable Table of Geographical Determinations of Places in the Kingdom of the Two Sicilies. There is also much useful information in the extracts from private letters to Count Ranuzzi, given in the appendix to his work.

From another valued correspondent in Italy we have been favoured

with notices of what has been lately done in that country for the advance of Geographical science; and among the most prominent of the labours of the Italian engineers, that now publishing under the title of 'The Alps which surround Italy,' has been especially pointed out to our attention. Fortunately, through the great kindness of General Annibale di Saluzzo, the director of this important work, we have received a copy of the first volume and its corresponding atlas; so that we are enabled to speak of it from personal examination. The object of the work in question is the consideration of the Alps in a military point of view; and certainly, so considered, their interest is great. To us, as Geographers, however, the chief interest of the work will be found in what indeed constitutes but the introduction to it, viz., the physico-geographical description of this important mountain-chain from the Mediterranean to the Adriatic. This is comprised in one very thick royal octavo volume. The following list of chapters will be sufficient to show how fully the subject has been gone into:—Chap. 1. The natural boundaries of Italy, the commencement and termination of the Alps, and their divisions. Chap. 2. Slope and general development of the chain, and the principal groupes whence extensive secondary chains branch off. Chap. 3. The counterscarps and branches of the Italian Alps. Chap. 4. The various regions of the chain, perpetual snow, vegetation, and animals characteristic of the Alps. Chap. 5. Geology and mineralogy of the chain, mines, quarries, and mineral waters. Chap. 6. Of the forests in general, but especially of those which cover the heights of the Peninsula. Chap. 7. Roads and means of communication across the Alps. Chap. 8. Of the valleys, the rivers, and streams which take their rise on the heights to the N.E. of Italy and flow into the plains. Chap. 9. Of the lakes in and on the flanks of the Alpine chain. Chap. 10. Canals of irrigation along the mountain slopes, and in the western plain of the Peninsula. Chap. 11. Height of the principal mountains, of the defiles, and of the inhabited places on the summit, on the buttresses, and on the slopes of the Alps. This enumeration would indicate the complete exhaustion of the subject, and constitute the most complete description hitherto made public of the principal mountain-chain of Europe. The atlas, which accompanies this part of the work, consists of a map of the Alps in four sheets, on the scale of $\frac{1}{600,000}$, of the accuracy of which we have no doubt; but we cannot help regretting that some more satisfactory mode of indicating the positive and relative inclination and heights, has not been substituted for the old arbitrary mode of light and shade. This defect is, however, in some degree compensated by the remaining plates of the atlas, which present certainly the most effective profiles, or rather panoramic views, we have

ever seen. These profiles are double; in the lower ones the same scale is used for the heights as that employed for horizontal distances. But not to give disproportioned space in this address to any particular work, I will merely add, that besides the part already mentioned, there will be four other parts, historical and military, accompanied by an atlas of special plans. Appended to every chapter of the work is the name of the officer of the royal corps of *Etat-Major* by whom it was compiled. The notes, with the exception of those to chapter 5, were written by the Quartermaster-General himself. The plans and designs were executed by Major Cassalegno, our honorary member at Turin. The two catalogues in the fourth chapter, that of the Phanerogamous plants, and that of the animals characteristic of the Alps, were supplied by the distinguished professors Morris and Gené.

The great, and, as we are informed, very valuable work of Captain Bartolomei's, entitled '*Topographical and Statistical Information respecting the Sardinian States*,' is almost finished; and the same may be said of Signor Repetti's '*Geographical, Physical, and Historical Dictionary of Tuscany*.' The '*Italian Miscellany*' of Adrian Balbi is also deserving of notice; it contains a series of tracts on the geography and statistics of Italy, collected and arranged by Eugenio Balbi. Of these may be specially mentioned that on '*The Natural Boundaries of Italy*;' '*The Summary of Italian Topography*;' that '*Relative to the latest works on Italian Geography and Statistics*.' Another, '*On some recent Italian Geodesic and Chartographic Works*;' the articles on Sardinia, Corsica, Tuscany, Sicily, and the Maltese group; a geographical question, debated by the Italian geographers, &c. The various writings in this miscellany belong to different epochs.

Signor Predari, we learn, has, with the aid of some other persons, undertaken at Milan the publication of a '*Universal Chorographical Dictionary of Italy*,' systematically arranged according to the present political divisions of each separate state. It will form four large volumes, but only a few numbers of it have as yet appeared.

In Tuscany, besides the work of Repetti, already mentioned as nearly completed, other works of importance are going on, some of them nearly finished. At Naples, Signor Mastriani proceeds slowly with the publication of his '*Geographical and Historical Dictionary of the Two Sicilies*.'

With respect to new maps, few have come to the knowledge of our correspondent. The topographical department at Naples, under the direction of our highly-esteemed and zealous honorary member, General Visconti, is still continuing its important labours, as we learn from the following notice, which also contains what you will all hear with un-

feigned regret, an account of the sudden death of Captain Fergola, of the engineers, in the execution of his surveying labours.

The triangulation of the first order,* relating to the extension of an arc of the meridian between Termoli and Cape Pássaro, has been attended by great difficulties in the transit from the coasts of Calabria to those of Sicily; nor was the season favourable for observations. However, six triangles were measured, by the last of which was determined the *side* of Sicily which will, in the present year, 1846, serve as a basis for the triangulation which is to be prolonged towards Cape Pássaro, the southernmost point of Sicily.

"This triangulation of the first order has," says General Visconti, "unhappily deprived us of Captain Fergola, of the engineers—a loss which will be felt in the topographical office for many years to come. Signor Fergola, in 1845, was constantly thwarted by bad weather, and had been for some days stationed on Mount Antennamare, which is above Messina, in order to measure angles with his repeating circle. On the 25th of November, 1845, he was compelled, by a violent storm, to suspend his observations, and he took refuge, with his soldiers and instruments, in a ruined chapel on the mountain. There was a tremendous storm of hail and wind, and he was standing in one of the door-ways of the chapel observing it, when the lightning struck him on the head, and instantly deprived him of life.

"In knowledge of geodesy, theoretical and practical, Captain Fergola was certainly not surpassed by any man in Europe; he had, if I may use such an expression, a geodetic tact peculiar to himself. His geodetic operations may serve as models; and in that line he succeeded perfectly in everything. To him were entrusted the course of the geodetic operations, and the instruction of the engineer-cadets in geodesy. By his death the topographical office has sustained an irreparable loss. Many projected operations it will now be no longer possible to execute; among which is the triangulation across the Adriatic, in order to connect the Austrian triangles in Dalmatia with ours in Apulia (Puglia)."

The triangulations of the 2nd and 3rd orders have advanced according as they were required in the topographical surveys.

The topographical map of the frontier, on a scale of $\frac{1}{100,000}$, having

* In the President's Address for 1843, the following passage occurs under the head of Naples:—"The triangulation carried on by the Institute of Military Geography of Vienna, for the construction of the great chorographic map of Italy, is proceeding:" from which it would naturally be inferred that Austrian engineers had been employed within the territory of the kingdom of Naples; which not being the case, we should read in place of the above, "The triangulation carried on by the Institute of Military Geography of Vienna, and by that of Naples."

been continued, one part of the district of Avezzano in Abruzzo has been laid down, properly the north-western portion of that district, with part of the environs of the Lake of Celano. When it is considered that the whole number of operators on that extent of ground was only nine, and that the period of field-work does not usually last for more than six months, owing to circumstances foreign to the topographical office, it will be admitted that the amount prepared, as mentioned above, was not inconsiderable for the year 1845.

There have been also taken surveys, on a scale of $\frac{1}{250,000}$, of all the excavations newly made in Pompeii from 1843 to the present time onwards.

While thus speaking of charts and surveys I cannot help expressing the hope that the Neapolitan authorities will, ere long, correct, by a careful survey, the western and southern coast lines of the kingdom; the more, as the coasts of the neighbouring states—Rome, Sardinia, and Turin—are being accurately laid down by the French engineers, on the same scale as their own surveys.

The Hydrographical Chart of the Mediterranean, including the Black Sea, in three large sheets, with a scale of $\frac{1}{1,000,000}$ on a mean parallel, has been completed and published.

The engraving of three new sheets of the great map of the environs of Naples on a scale of $\frac{1}{25,000}$, has been continued. It comprehends Capua, Caserta, &c., but will not be finished till next year.

The engraving of the great topographico-military map of the kingdom of the Two Sicilies, on a scale of $\frac{1}{250,000}$, is continued, and four more sheets (the first, comprehending Naples, having been published two years ago) have been finished; the whole is going on progressively.

The engraving, likewise, of many special plans of harbours, channels, &c., for the use of the Neapolitan navy, is continued.

The whole delineation of the Faro of Messina in several sheets, on a scale of $\frac{1}{100,000}$, and of the city and port of Messina, on a scale of $\frac{1}{50,000}$, has been completed: these works were executed in the years 1841, 42, 43, and 44, and have been laid before the king. The publication of them awaits his Majesty's commands.

The protraction of the topographical field work, on a scale of $\frac{1}{250,000}$, has been constantly made, as soon as the work on the spot was finished.

The original drawing of the itinerary map of the kingdom, on four sheets, with a scale of $\frac{1}{250,000}$, has been continued, and will be engraved.

Besides the abovementioned, which are the ordinary labours of the topographical office, it always has in hand a great many other extra-

ordinary works of various kinds, continually called for by the king or the superior authorities.

BELGIUM.—At Bruxelles various works have been published during the past year, bearing directly or indirectly on geography and topography. Many of these are of local interest; we may, however, mention as of more general importance the '*Dictionnaire de la Belgique*,' by Charles Meert; a supplement to the memoir on the '*Navigation de la Belgique*,' by the Inspector Visquain; a work on Elementary Geography and one on Ancient Geography by M. P. Neu.

Of maps, Mr. Raes has published an Atlas of Belgium, while M. de Vandermaelen, our valued honorary member, has, as usual, sent out from his admirable geographical establishment a great number of interesting and important works. Many of these are connected with railways, and therefore belong more directly to commerce and statistics than to geography. Some, however, are of a different character, such as his '*Etude sur les Voyages de Benjamin de Tudela*,' an object of great interest to ancient geography; a Map of the Watercourses of Eastern Flanders, and others relating to hydrography, an important branch of physical geography. A Topographical Map of Belgium in 25 sheets. Of this the following sheets are already finished, viz., Bruges, Ostend, Mons, Charleroy, Philippeville, and Dours. Those of Bruxelles, Dinant, Namur, Anvers, Turnhout, Brée, and Neune Eglise are nearly terminated. This important map has been somewhat delayed in consequence of the numerous railway projects which in Belgium and elsewhere in Germany, as with us, seem to have engrossed almost exclusive attention. The scale of the map in question is $\frac{1}{400,000}$. Besides this, four sheets are completely finished of a Topographical Map of Belgium in 250 sheets, on the scale of $\frac{1}{250,000}$. The four sheets that are ready are those of Bruxelles, Torvuieren, Assche, and Vilvorde. Several other sheets, such as those of Louvain, Malines, Namur, Gosselies, Fontaine l'Evêque, Binche, and Mons are near being completed. The four first we have already been favoured with through the kindness of M. Vandermaelen.

A map of explorations in the states west of the United States of America, prepared by Baron Vandertraeten de Pontbiz. This map is destined to accompany a work by the Baron relating to emigration.

A plan of Bruxelles much more complete than any before published.

Of surveys completed in Belgium we may mention a part of the province of Liege, comprising the cantons of Waremmes, Landen, Avennes, and Bodegnée. Also a part of East Flanders, comprising several cantons, and a part of Brabant, comprising four cantons, which have all been executed for the geographical establishment at Bruxelles.

Of Belgian travellers, Dr. Maris, who visited Texas in 1844, returned at the commencement of the present year, and intends shortly setting out for Paraguay. We have not been able to learn what have been the results of the doctor's travels; but hope they may throw some new light on the country he has visited.

GERMANY.—From our valued honorary member, Professor Von Berghaus of Potsdam, so well known to you all by his important labours for the extension of geographical science, we have been favoured with the following account of what has been done in Germany since the period of our last anniversary.

The additions to our geographical and ethnographical knowledge which, says the Professor, must go hand in hand, have not been considerable during the past year. Of the few German works which have really advanced the science may be mentioned:—

1. 'Klippstein's Contributions to the Geological Knowledge of the Eastern Alps,' of which valuable work the third number has appeared.

2. Schaubach's 'Picture of the German Alps,' of which excellent monograph two volumes have been published.

3. The very useful publication of Dr. Carl Bernhardi, of Cassel, entitled a 'Linguistic Map of Germany,' in which the limits of the German language, in Germany itself, and in the more considerable colonies which the Germans have established in other places, as in Zips and in Transylvania, has been followed in 1845 by a publication of Dr. William Stricher, of Frankfort-on-the-Maine, 'On the Extension of the German Nation over the Surface of the Globe.' In this work the author has, with great industry, collected and arranged all the facts bearing upon his subject, and has paid particular attention to the great part which the Germans have had in peopling the United States of America. But he has, says M. Berghaus, overlooked one region colonised by Germans, and where they have strictly preserved their national character and manners, viz., South Africa. The Dutch population at the Cape of Good Hope must be considered a branch of the German nation, as their countrymen the Hollanders both geographically and ethnographically form a part of the German people, though separated from them in a political view.

Dr. F. Leizmann has published 'Antipathies between the German and Slavonian Nations;' and the Curator of the State Library of Szecheny in the National Museum of Hungary, at Pesth, Stephen von Horvat, has published a 'Primæval History of the Slavonians from the Trojan War to the Times of Justinian.' This work is said to be valuable, from its collection and arrangement of the most ancient facts and testimonies on record respecting the Slavonians; but disfigured by the bad feeling which pervades it.

Seifort, by his publication on Acragas (Girgenti) and its territory, has increased our knowledge of the geography and history of Sicily; and Leonardi has given, in a small volume, an interesting picture of the manners and customs of the Rhetians, or inhabitants of the highlands of the Grisons.

Of German works contributing to the knowledge of countries situated in other quarters of the world, the first to be mentioned is Russeger's great work, being an account of his travels, principally in Africa, of which nine parts have been published.

The Baron Augustin has published 'A Description of Marocco from Actual Observation.' He treats of the geography and the history of the country, as also of its religious, political, military, and civil condition; and on these subjects adds something to our previous knowledge of the country.

Dr. Tams, of Altona, has published an account of the Portuguese possessions in South-Western Africa, in which he describes the low moral condition of the Portuguese settled there, together with the shocking example which they set to the natives, and the degraded state of Christianity.

Several works have been published on the United States of America, of which the most important is that by Grisson, of Hamburg, and that by the celebrated historian and tourist, Frederic von Raumer. There has also appeared the 'Report' of the commission sent by H. R. H. Prince Charles of Prussia to examine some parts of the Mosquito coast. This document contains a good deal of useful information on that part of intertropical America. It was originally proposed to establish there a German colony; but the project not being favourably received by the German public was long since abandoned. Tchudi, a Swiss naturalist, after travelling over Spanish South America for five years (from 1838 to 1842), has published the results of his observations on the Fauna of Peru in the periodical publications devoted to that branch of natural history; but his personal narrative and other observations are given in a separate work, entitled 'Peru; Sketches of a Traveller,' and contain a great deal of interesting matter on the republic of Peru and on Valparaiso.

Baron Kittlitz, a captain in the service of Russia, and the former companion of Admiral Lutke, has just published 'Views of the Vegetation on the Coasts and Islands of the Pacific.' They deserve, says Professor Berghaus, to be known in England.

The important work of Dr. Von Sieboldt on Nippon, although printed in Holland, is written in German. The fifteenth section has appeared.

Lieut. Zimmermann has published, in the form of Letters addressed to Alexander von Humboldt, 'A Memoir of the Lower Course of the Oxus to the Karabagas Lagune of the Caspian Sea.'

Augustin Burick has translated Marco Polo into German, and added a commentary, which has received some additions and corrections from the pen of Mr. Chas. Frederik Neumann, of Munich, who is well versed in the language of China. The last-mentioned learned individual has published a small volume entitled 'On the Condition of Mexico in the Fifth Century of our Era, according to Chinese Writers.' It is an account of that country, which, in the great Annals of the Celestial Empire, is called Fu-Sang, and which Deguignes thought might be a part of America, while Klaproth considered it as referring to the country of Nippon or Japan.

Mr. Kulb (Curator of the Municipal Library of Mayence) has endeavoured to extend geographical and ethnographical knowledge by incorporating those subjects in the biographies of celebrated travellers and discoverers.

Dr. Ernst Kapp has published some ingenious views on geographical and ethnological subjects under the title of 'Philosophy of Geography.'

Finally, Professor Berghaus himself has published an Ethnographical Picture-Book, which has been very well received; it contains 150 well-executed plates.

Of MAPS, we are informed, the following are now in progress :—

By the Austrian General Staff, a Special Map of the Margraviat of Moravia.

By the Prussian General Staff, a Map of the March of Brandenburg, on a scale of $\frac{1}{180,000}$, and a Map of the Provinces of Westphalia, &c., on a scale of $\frac{1}{36,000}$.

By the Bavarian General Staff, the Great Bavarian Atlas on the scale of $\frac{1}{36,000}$, and the Palatinate on the scale of $\frac{1}{180,000}$.

By the General Staff of the Grand Duchy of Hesse, a Map of that State on the scale of $\frac{1}{36,000}$.

By the General Staff of Baden, a Map of the Grand Duchy of Baden on the scale of $\frac{1}{36,000}$.

By the Geographico-Statistical Bureau of Wurtemberg, the map of the kingdom of Wurtemberg, on the scale of $\frac{1}{36,000}$, and also separate Maps of the Upper Bailiwicks on the scale of $\frac{1}{180,000}$, with geographical and statistical descriptions. Of this latter 18 parts have been published.

Besides these, there have been issued some fresh sections of the excellent 'Geographical Map of the Kingdom of Saxony,' under the special superintendence of Neuman and Cotta; and Partsch has at last begun the publication of his Geological Map of the Alps in Lower Austria, which had been promised by him long ago, and anxiously expected by the geologists; it contains the basin of Vienna.

Sartorius von Walterhausen has published the first part of his truly admirable Topographical Map of Mount Etna. Of General Maps I

shall only mention Handke's Atlas of the Prussian Monarchy, which, on account of its size is very handy, and is well executed.

The Physical Atlas of Prof. Berghaus is still in progress. He has just terminated the section containing the geography of the animal kingdom, and has passed on to ethnography. This atlas contains, among other general maps, a great special map representing the nations of Europe, which will shortly be published.

The Eighth part of Spruner's great work, his Historico-Geographical Atlas, has been published; it contains the history of the territories of the Ottoman Empire.

The Professor complains that in the new Topographical Map of Switzerland, which, it was expected, would give an exact representation of the form and nature of the Alps, the old system of representing the slopes by mere light and shade has been retained, which has caused a very great disappointment.

With regard to relief maps, the difficulty and expense attending them are such as greatly to limit their publication—a circumstance which Professor Berghaus is, like many others, very disposed to rejoice at, considering them decidedly a step backwards rather than a progress in improvement. This subject was touched upon by my predecessor; it is one of those on which opinions will differ, and on which each will exercise his own judgment.

The trigonometrical survey of the states of the German Confederation has been terminated, each country having been separately surveyed, though, in many cases, the triangles have been connected. Nothing, therefore, remains to be done but for the different governments to combine to give unity to the work, and add to it a geometrical description of all Germany. The Elector of Saxony was the first of the German sovereigns who set on foot a regular survey of his country, which has been regularly carried on ever since 1778. It may be observed that the geodetical measurements of the Austrian General Staff are distinguished by their indication of the vertical heights of places, so that the elevation of the German Alps is now generally known, to the great satisfaction of the geologist and physical geographer. It is much to be regretted that this plan is not universal.

In Prussia geodetical levels have been executed at the expense of the government from Swinemund on the Baltic to Berlin, and along the Oder to the Austrian frontier. The latter of these operations was rendered necessary for the hydraulic work to be executed along the river, and the former was undertaken at the request of M. Bessel, the astronomer, who was desirous of determining the length of the pendulum to vibrate seconds at Berlin. It was found that the trigonometrical levels

gave the same result for the height of the capital above the sea, as the barometrical observations continued for a number of years by Professor Berghaus had made it.

The latter gentleman, speaking of geographical education in Germany, complains that more pains are taken to make the people acquainted with the geography of Asia or of America than with that of Europe and their own country. I fear the same remark is but too applicable among ourselves.

His Royal Highness Prince Waldemar of Prussia (cousin, not nephew, of the king, as was printed by inadvertence in the last anniversary address) is still in India, whence, from his known zeal and industry, it is expected he will bring back to his country a rich harvest of interesting information. Consulting only his ardour for science, and burthened with the usual load carried by a traveller on foot, he scaled the lofty Himmalayah, crossed the frontier of the Celestial Empire, and reached the table-land of Thibet. The letters of Dr. Hoffmeister, who accompanied the prince, and which letters are addressed to Professor Lichtenstein, of Berlin, describe many objects of natural history quite new to us, and great collections made by the prince have already reached Berlin by different routes. It is understood to be the prince's intention of returning to Europe by Afghanistan, Persia, and Asia Minor. The presence of H. R. Highness with our gallant troops in the late sanguinary engagements on the Sutlej is known to you all, and to say that he was present is to say that he was no inactive spectator.

Lepsius has returned from his exploration of Egypt and Nubia, and great anxiety is manifested for the publication of the result of his labours.

Peters, who has been investigating the three kingdoms of nature in Mozambique and other places on the Eastern Coast of Africa, has not been heard of lately. A great deal is expected from the labours of this traveller, whose researches, it is confidently hoped, will enable us to fill up a good deal of what is now blank in our maps.

VIENNA.—General Skribanek, our talented corresponding member at Vienna, informs us that the following have just been published:—

The continuation of the special map of Krain by Freyer, 2nd and 3rd *livraisons*. The map of Bohemia by Kumersberg, 2nd sheet. By the Imperial and Royal Military Institute, the special map of Moravia, scale 1:1,000,000, 20 sheets. The general map of the same country, scale 1:1,000,000. Both entirely finished.

A new map of Europe, engraved on stone, and printed with colours by Mr. Scheda, in 25 sheets, of which 6 have appeared.

Of surveys, those of Bohemia and Hungary, under the direction of the

Geographical Institute, have been continued. The triangulation in Hungary, and astronomical observations, mentioned last year, have been executed. Next year the triangulation will be continued in Hungary and on the Croatian frontier.

The Military Geographical Institute is now occupied with the special map of Bohemia, scale 1:44,000; and with the continuation of the general map of Italy; and the special one of the States of the Church, Tuscany, and Lucca.

SAXONY.—At Dresden there has been published Part V. of a Geognostic Description of the Kingdom of Saxony and the adjacent provinces, by D. Naumann, containing a geognostic sketch of the environs of Dresden and Misnia, with three lithographed plates.

Of maps, D. Colta has lately published the Geognostic Map of Thuringia, as a continuation of the Geognostic Map of Saxony, published by the Saxon Government. It contains the section of Rudolstadt, Meiningen.

Of the geographical labours in Saxony undertaken by the Government, our correspondent, Colonel Oberreit, informs us he has nothing new to add to what was stated in Mr. Hamilton's Address of 1842. As for the publications of private individuals, it appears that in Saxony, as elsewhere in Europe, there have been a few booksellers' speculations which have added nothing new or considerable to our knowledge; and that as regards maps they have been exclusively topographical plans made for the use of different railway companies.

The beautiful Topographical Atlas of Saxony, of which we possess the first sheets, is in progress of completion. The 3rd Part, containing the sections of Zickau, Bornä, Leipzig, and Ochatz, is almost all engraved; but some time must yet elapse before it will be ready for publication.

DENMARK.—From Denmark we have been favoured with some interesting information.

'*Scripta Historica Islandorum*,' vol. xii. (pp. 658, in 8vo.), has just been published, and completes the edition, first commenced by the Royal Society of Northern Antiquaries, of the Historical Sagas, recording events which happened in Norway, Sweden, and Denmark, in the original Icelandic text, with two translations, one into Latin, and another into Danish (36 vols.). This volume contains *Regesta Geographica* to the whole work, which for this large cycle of sagas may be considered as tantamount to an old Northern Geographical Gazetteer, inasmuch as attention has been paid to other northern manuscripts of importance in a geographical point of view. Complete, however, it cannot by any means be called, neither as regards Iceland especially, nor other lands

in America whose copious historical sources have in the present instance been but partially made use of, nor as relates to those European countries that are extra-Scandinavian, especially Russia and the British Isles, for whose remote history and ancient geography the old northern writings contain such interesting materials; but it is to be hoped that the Society will in due time take an opportunity of extending its labours in that direction also, which we would earnestly exhort them to do, convinced as we are that they will thereby supply important contributions towards the history of geography. The present volume does however contain the names of a number of places situated without the bounds of Scandinavia, in countries of which mention is made in the writings published in the work itself. To the name of each place is annexed its Icelandic or old Danish form; and the position of the place is investigated by means of comparison with other historical data, and with modern geography. The basis for this has been the 'Geographical Register,' compiled in Danish by Nicolas M. Petersen, inserted in the 12th vol. of the work entitled 'Oldnordiske Sagaer,' published by the Society, and now remodelled in Latin, with several additions and corrections, by Grime T. Thomsen, A.M., a gentleman who has lately distinguished himself by a philosophico-æsthetical essay on Byron, lately published by him in Danish.

The same indefatigable Society of Northern Antiquaries has also published, in the past year, *Grænland's Historiske Mindesmærker* (i.e. 'Historical Monuments of Greenland'), vol. iii., 958 pages, with 12 copperplates, which volume completes the work. The 1st and 2nd vols. (of pp. 814 and 794 respectively) were published in 1838. After Professor Rafn had finished the compilation of his separate work, *Antiquitates Americanae*, which was published by the Society in 1837, he connected himself with Professor Finn Magnusen, also one of our distinguished foreign members, for the purpose of editing, under the auspices of the Society, the great collection of original documents relating to the history of that remarkable Polar land (Greenland) which was first seen in 877, and colonised in 986. With a view to doing all in their power to elucidate the subject of ancient Greenland, the Society, during the ten years from 1832 to 1841, caused journeys to be undertaken and explorations made in such of the Greenland firths as were of the greatest importance with respect to ancient colonization. By excavations among the ruins of the ancient colony, there was obtained a collection of inscriptions and objects of antiquity which are now preserved in the American Museum founded by the Society, and ground plans were taken of several edifices. Of the Reports received on this occasion we must in an especial manner notice—as exhibiting evidence of the most assi-

duous care, and as moreover embracing the most important part of the country—the explorations undertaken by the Rev. George F. Jorgensen, of the firths of Igalikko and Tunnudluarvik, where the most considerable ruins are situated. The volume in question (vol. iii.) contains extracts from annals and a collection of diplomas relating to Greenland, compiled by Finn Magnusen (to this part appertains a plate exhibiting seals of the Greenland bishops); ancient geographical writings, compiled by Finn Magnusen and Charles C. Rafn; the voyages of the brothers Zenowith, introductory remarks and notes by Dr. Bredsdorff; a review of more recent voyages for the rediscovery of Greenland, by Dr. C. Pingel; and an antiquarian Chorography of Greenland, drawn up by J. J. A. Worsaal from the accounts furnished by various travellers of their respective explorations. The work concludes with a review of the *Ancient Geography of Greenland*, by Professor Rafn, founded on a collation of the notices contained in the ancient MSS., and the accounts of the country furnished by the travellers; to which is added a list of the bishops, and a chronological conspectus of the ancient and modern history of the country; a historical index of names, a geographical index, and an antiquarian index-rerum. Copperplate maps are annexed to the two most important districts of ancient Greenland, the Eystribygd and the Vestribygd (the eastern and the western settlements), exhibiting the position of the numerous ruins. There are moreover plans and elevations of the most important ecclesiastical ruins and other rudera; also delineations of Runic stones, and other Scandinavian antiquities found in Greenland.

Of the above-mentioned contents of the volume we must here restrict ourselves to noticing, as most closely connected with our special object, the result of Professor Rafn's review of the ancient geography of Greenland, according to which the E. coast of that country was in ancient times inhabited by Europeans, although, from the account of Are Frode, the earliest Icelandic historian, it would appear that on the discovery of the country and survey of its coast, there were found, both on the E. and W. coasts, remains indicative of their having been resorted to at an earlier period by the Skrœlingar, or Esquimaux of America. The *Sealbarde* of the ancient Northmen, discovered in 1194, appears to be the tract of coast surveyed by Volkert Bohn, of the island of Foehr in 1761, and rediscovered by Scoresby, by whom it was named Liverpool Coast. The Gunnbiarnarsker, discovered in 877 by Gunbiorn, will be the islands seen off the coast by Capt. W. A. Graah,* in lat. 65° 30' N.; Hirtserk, the southernmost promontory Cape Farewell; the chief seat

* Captain Graah's work on Greenland, it may be remembered, has been published in English at the expense of the Society.

of the colony, the present district of Julianæhaab. The most important of the colonised firths are named in order from S. to N. in four original MSS., of which the latest and most circumstantial is a Chorography by Ivar Bardsen, who in 1341 was sent by the Bishop of Bergen to Greenland, and who for many years was superintendent of the episcopal see of Gardar.

Herulfsnes with Heriulfsfirth, where Heriulf Bardsen settled in 986, and where his son Bearne Heriulfsen arrived in the autumn of the same year (after having seen the more southern American coasts), is the Ikigeit of the present day. Of the church mentioned in Bishop Gudmund Arason's Saga, some of the ruins are still left, and several inscriptions have been found. Ketihfirth, with its two churches, is the modern Tessermint, where Mr. Aroe found a quantity of ruins. Rafnsfirth, which in the first year of the colonization (986) was colonized by the Landnamsmann Rafn, is now Ounartok. According to the ancient description of Ivar Bardsen, of the fourteenth century, there were in this firth islets with springs of hot water. There are in the islet of Ounartok three warm springs which have given to the island and firth their Esquimaux name, signifying in that language the boiling (island). Captain W. A. Graah, of the Royal Danish Navy, who visited the place in July, 1828, found the temperature of the water in these springs ranging from 26° to $33\frac{1}{2}^{\circ}$ R. SIGLU FIRTH is now Aglustok. Here the ruins of Voga church were discovered by the Rev. Valentine Müller, who visited the firth in 1832 and 1833 on behalf of the Society. He saw moreover the rudera of a mansion belonging to the King, called by Ivar Bardsen, Foss, or waterfall, situated near a large stream, forming a waterfall of 200 feet in height. EINARSFIRTH is Igalikko. The ruins of the cathedral and episcopal see of GARDAN, which was founded in 1126, and stood for upwards of three centuries, were rediscovered at Kaksiarsuk, on the eastern arm of this firth. ERIKSFIRTH is now TUNNUDLUARBIK together with the northern arm of Igalikko, at which the ruins of the principal settlement of BRATTAHLID, with LEIDAR church (the church of the district), have been found, and have been discovered the vestiges of the house of Brattahlid itself, so denominated from its being built up against the side of a steep precipice (from *Brattr* and *hlid*). The Rev. Mr. Jorgensen, who has given a description and ground plan of the whole settlement, which may be compared to an entire town, observes that a steep rock forms one of the walls of this house, the building of which was accomplished with incredible labour. It was erected by Erik the Red, who in the year 986 made it his residence. It was subsequently occupied, at the commencement of the eleventh century, by his celebrated son, Leif the Happy, and by his grandson, Thorkel; and it continued down to the

latest time of the colony to be the abode of the sheriff. Here in this house the far-famed couple, Thorfinn Karlsefne and Gudrid Thorbiornsdotter, celebrated, in 1007, their nuptials, and determined on their remarkable voyage of discovery to that more southern land which, seven years before, had been discovered and visited by Leif Erikson, Vinland, in America (the present Massachusetts and Rhode Island). "We cannot here refrain," says our correspondent in alluding to this house, "on behalf of geographical science, from expressing a wish that the ruins of this house, which has thus acquired such historical interest, may continue to be preserved; and we have no doubt that the enlightened King of Denmark, who takes so lively an interest in the monuments of antiquity, will cause whatever is requisite to be done for the preservation of one of the most remarkable of the historical monuments of the new world." OSAFIRTH, which was the most western firth in the Eystrabygd, will be the great bay in which lies the island of Sennerut. One arm of this firth was called UTIBLIKSFIRTH, a name adopted by the ancient Northmen from the Esquimaux, with whom they must consequently have held intercourse at an early period in Greenland, for it is the Esquimaux word ITIBLIK, signifying an isthmus; and there is, in fact, found here a remarkable isthmus which the Esquimaux still call by that name. Eystrabygd comprised anciently 190 settlements, with 12 churches, of most of which unquestionable ruins have been found. The site of Westribygd, which included but 90 settlements and 4 churches, lay farther towards the N., and the ancient STEINSE must be placed at Aglomersot. RANGEFIRTH, at Amaroglik; ANGAFIRTH, with a church at *Hope* in Baal's River, in the present district of Gotthaab; and LYSUFIRTH, will be Isertok, in the district of Sukkertoppen. Of the ancient NONTOSSETUR, or summer stations for fishing and hunting, we may mention BIARNEY (which had been already visited in 1007 by Thorfinn Karlsefne in his voyage to Vinland), now Disco; the island of Kingiktorsoak, to the N. of the most northern of the present Danish establishment Upernivikuhoe, and in which a curious Runic stone of 1135 was found in 1824; and KROKSFIRTH, through which some clergymen from the episcopal see of Gardar performed, in 1266, an exploratory journey, now proved, from astronomical notices contained in the ancient account of this journey, to be Sir James Lancaster's Sound and Barrow's Strait, together with Prince Regent's Inlet.

RUSSIA.—From St. Petersburg we learn with very great satisfaction that a Geographical Society has been formed, to which the Emperor, with his accustomed liberality in all that relates to the physical sciences, has contributed an annual sum of 10,000 silver rubles, nearly 1700*l.* of our money. The origin of this Society is supposed to be the very great in-

terest excited by the travels of M. Middendorff, to whom one of your medals has just been awarded, and of other Russians whose explorations into remote and hitherto little known regions of the vast empire of the Czar have thrown so much new light upon its geography. We trust the efforts of this new Society will be attended with the success it anticipates, and that our award of this day, contemporaneous with its birth, may prove a happy omen of a brilliant career. M. Middendorff's travels, mentioned in a former Address, are about to be published by the Academy of Sciences of St. Petersburg.

In connexion with this subject we are informed by Sir Roderick Murchison that he has just received letters from St. Petersburg, acquainting him that the Imperial Geographical Society of that capital, of which we have just spoken, and which has been formed on the model of the Royal Geographical Society of London, has resolved that its first great exploratory expedition should be directed along the eastern flank of the Ural Mountains from the parallel of 60° N. latitude (Bogorlofsk) to the Glacial Sea. This survey is to be conducted by Count A. von Keyserling, already known to the public through his valuable geological co-operation in the work on Russia by Sir R. Murchison, and for his geographical researches in the hitherto little known region of the Petchora on the north-western flank of the Arctic Ural; and who, by his sound acquirements in zoology, geology, and geography, will, it is presumed, during the ensuing three years throw great additional light on the wild Arctic regions which separate Europe from Asia; and which, inhabited by Ostiaks and Samoyedes, extend beyond the limits of arboral vegetation. Among numerous other objects, it is hoped that this expedition (the head quarters of which are to be at Obdorsk) will elicit new results concerning the entombment and preservation of the Mammoths.

Count Keyserling's work on the Petchora, North-western Ural, and Timan Ridge, is about to appear, under the title of '*Wissenschaftliche Beobachtungen in Lande der Petchora.*'

By our valued honorary member, M. Kupffer, we are informed that the great magnetic arrangements are in progress, and that the observations will be continued in Russia on the same plan as in England and in our colonies, according to the resolutions passed at the Magnetic Conference at Cambridge.

We wait with great impatience for the publication of the two important geographical works, the travels of M. de Middendorff in the northern parts of Western Siberia in 1843, and the completion of the account of those of M. P. de Tchihatcheff in the Altaï in 1842, of which the first portion has already been published in French.

ASIA.

PERSIA.—Dr. Cloquet, appointed to a situation in Persia, has received instructions from the French Academy of Sciences for making observations on the botany and zoology of the country; we may therefore hope in time for further information on the natural productions of that part of Asia.

Indian Surveys.—The surveys in India are proceeding satisfactorily under the superintendence of Captain Waugh, the Surveyor-General. A great addition to our trigonometrical surveys may be expected in the course of the ensuing season. The different works enumerated in a former Address will be published very shortly.

We may also hope that the late political events in the N.W. of India will, by increasing the influence of Great Britain in those parts, give additional facilities for perfecting our knowledge of the geography of the Punjaub and Kashmir.

The Bombay Government has transmitted to the Court of Directors, by the bimonthly mail of April, two charts of the survey of the S.E. coast of Arabia, the one from Ras Maribut to Ras Segur, the other from Ras Fartuch to the ruins of Messinah, accompanied with a well-written report, not only of the progress of the survey, but of animated details of the various tribes who inhabit the coast, with some excursions, by Dr. Carter, of the *Palinurus*, into the mountainous districts which lie near the coast.

There is also transmitted by this mail a descriptive account of the ruins of El Balad, by Assistant-surgeon H. J. Carter, of the *Palinurus*, together with the sketches in original of the ruins referred to therein.

China.—Everything connected with the Chinese empire is now of great interest to us, and I have therefore pleasure in calling your attention to a very interesting memoir of physical geography by our learned corresponding member M. Edward Biot, published in the '*Journal Asiatique*' of Paris. It is on the progressive extension of the north-eastern coast of China from very early times. It would appear, from a critical examination of Chinese documents of various epochs, compared with the labours of the Jesuits and with the most modern surveys of the coast, that this latter has encroached upon the sea in the Gulf of Pe-chi-li, about the mouth of the Pei-ho, at the rate of about $\frac{1}{2}$ of a kilometer per annum, at which rate the whole gulf would be filled up or obliterated in 2430 years; while the inner and narrower part of the gulf of Leaotong will probably be filled up in less than 1100 years. The outer or wider part of this gulf will, in M. Biot's opinion, be the last filled up. The whole of the eastern coast about the mouths of the

Hoang-ho and the Yangtse Kiang has considerably advanced. Of this encroachment of the land upon the sea, the proofs advanced by M. Biot appear satisfactory; indeed it is a fact well known and authenticated, that the land in many parts of the world gains upon the sea, while in other places, by way of compensation, the sea encroaches on the land. If we admit, and there seems no reason for doubting the fact, that the quantity of the water of the ocean remains ever the same, it is evident that the immense quantity of detrital matter annually emptied into the bed of the ocean must occasion a displacement of a corresponding bulk of water—a displacement rendered more or less evident on different coasts, according to a variety of modifying circumstances. Nevertheless the filling up of extensive gulfs is a great operation; and, without wishing in the least to disparage the calculations of our valued corresponding member, it may be remarked that Nature seems, in some cases at least, and by operations unperceived by us, to prevent such fillings up of gulfs and seas; or at least to postpone the event far beyond the periods we would assign for them, in confirmation of which I need only call to your recollection the case of the Palus Meotis, or Sea of Azoff, which ancient geographers predicted would be soon filled up, but which, though shallow, shows no sign of change.

M. Biot says that chronometrical determinations by the officers of the French corvette *Danaide* fix the positions of Tchín-haï and Ning-po as within a few minutes only of the places assigned to them by the missionaries, whereas Arkwright (Arrowsmith?), Wyld, and Klaproth place these towns a whole degree too far W., an error which he thinks it right to call attention to.

The chart of this part of the coast of China, as laid down by our latest surveys, is not yet published; but through the kindness of the Hydrographical Department of the Admiralty, I learn that Capt. Collinson places Tchín-haï in long. $121^{\circ} 43' 6''$ E. of Greenwich, and Ning-po in $121^{\circ} 35' 0''$, thus agreeing within $3'$ of longitude with the officers of the *Danaide*.

Sir J. Davis (Governor of Hong Kong), in a letter written in November last, also informs me that the E. coast of Formosa was laid down fully a degree too much to the E., the *Agincourt*, of 74 guns, sailing over what was represented as dry land. Capt. Collinson had discovered on the N. of Formosa a mine of excellent coal, which may prove highly useful to our steamers.

M. Biot has published other geographical memoirs in the '*Journal Asiatique*,' one of them a Note on two Chinese Maps of the Great Canal and Yellow River.

While on the subject of China, I may also state that, in the '*An-*

nales de la propagation de la Foi, which is a continuation of the celebrated '*Lettres Edifiantes,*' and which contain many interesting communications from the Roman Catholic missionaries dispersed throughout Asia, America, and Polynesia, you will find, in the number for May and July, a very detailed letter of one of the missionaries who in 1842 travelled from the extremity of the lake Po-yang, as far as Hang-tcheou-fou, and who describes the immense transport which is carried on the Kiang, and other interesting matters. In the number for January of the present year, there is an account of the excursion of another missionary, M. Grandjean, into the very little known country of Laos to the N.E. of the Birman Empire. The traveller divides the Laosians into two people—the Black-bellies, who tattoo themselves, and the White-bellies, who do not tattoo themselves. He resided a month at the chief town of the Black-bellies. The Laosians, he says, are generally an agricultural people, and bear considerable analogy to the Siamese.

Isle of Bourbon.—M. Choron, appointed to a scientific situation in the island of Bourbon, where he expects to reside for some years, has been supplied at his own request with such instructions as are necessary for the observation of everything of a scientific nature connected with the island. There is no doubt but that from its situation it may furnish many interesting data for the general physics of the globe.

Arabia.—In the French '*Journal Asiatique*' will be found the detailed account of M. Amand's travels in Southern Arabia: he visited the ancient dyke of Mareb, and copied there a great many Hamyaritic inscriptions.

The Rev. Mr. Brockman, who has been for more than a year exploring the S. coast of Arabia, and has made himself master of the Bedouin as well as Arabic language, having acquainted the Council that a favourable opportunity presented itself for his penetrating into the interior of the province of Hadramaut, under the protection of one of the more powerful chiefs, but that, his private funds being exhausted, he must forego this unexpected prospect of success, unless he could receive the means of providing for his journey, the Council, as you have already heard, obtained, through the liberality of Her Majesty's Government and the East India Company, the required sum, and we may hope through Mr. Brockman's exertions to obtain much new information on the antiquities as well as geography of that little known region.

AFRICA.

EGYPT.—Indications of coal, it is said, have been found by a French engineer, in the southern part of the Wady Arabah, in the gulf of Suez. Should it be found to exist in any quantity, of good quality, and easily

obtained, it will be of great importance both for the navigation of the Red Sea and for the future application of steam power to the industry of Egypt.

ABYSSINIA AND THE NILE.—Notwithstanding the great number of travellers who of late years have visited Abyssinia, and more or less extensively explored various parts of it, the great question of its rivers, principally of the so called two Niles, the white and the blue, seems as far as ever from being definitively settled. Nor can we altogether wonder at this; nothing can be more uncertain than the wandering course of rivers; they acknowledge but one law, that of seeking the lowest level; but it is this inclined course itself, this *thalweg*, which is subject to endless variety in its windings and doublings, so that when two travellers strike the same stream at no great distance from each other, it not unfrequently happens they will each, with equal truth, declare its waters to flow in directions diametrically opposite. Another source of error may be traced to affluents and recipients being taken for one another, by the inhabitants on different sides of the valley. There is therefore but one certain way of ascertaining the course and direction of a river, and that is by tracing it down in its whole length from source to recipient. This is the more necessary, as many rivers are found to open for themselves a passage through mountain ridges, and otherwise run in directions essentially different from what the apparent conformation of the country or region would seem to indicate. Thus it is that we are still in uncertainty respecting the Bahr-el-Abiad, and the true Abbai, or Bahr-el-Azrek, which latter, according to Lane, is the Dedhesa. Monsieur Antoine d'Abbadie, who, as you well know, has sojourned several years in Abyssinia, has not neglected to reap what information he could respecting the Nile. In the Bulletin de la Société de Géographie of Paris for last May will be found a communication by him on the subject, and which he begins by saying,—“The sources of the Nile constitute the most important geographical question ever raised.” In the opinion of M. d'Abbadie, the Gojeb (first mentioned by our countryman Dr. Beke) is identified with the White Nile, of which he, M. d'Abbadie, says it is the true source, placed, according to his observations, in lat. $7^{\circ} 20'$ N., and long. $1^{\circ} 20'$ W. of Sakka, a relative position absolutely identical with that laid down by Dr. Beke in 1843, in his map, published in the 13th vol. of our Journal. This river, says the French traveller, known to us as the Bahr-el-Abiad, or White Nile—to the people of Sidama as the Godefo, or Godepo—to the Gallas as the Godjeb, or Godeb—to the Yamma and Yangara as the Omo—to the Dawaro as the Ouma—and to the people of Wallaga as the Bago, takes a spiral direction, encircling Kaffa like an island, and receiving a great many tributaries in its

course. This is quite confirmatory of the information obtained by Dr. Beke from a Mohammedan merchant, named Omar Ibn Nejat, who expressly informed that traveller that "the Godjeb joins the Abá of Sennaar." At one of the Society's meetings, in December, 1843, Dr. Beke exhibited a map drawn by him under Omar's dictation, in which the junction of the two rivers corresponds in a remarkable manner with the delineation of the upper course of the Bahr-el-Abiad and its affluents in M. Jomard's map. Be it observed, however, that the opinions emitted by M. d'Abbadie and Dr. Beke, being founded chiefly on native information, cannot be considered as satisfactorily deciding the question of the source of the White Nile.* Indeed so far still is the source of this mysterious river from being determined, that another French traveller, M. Lafargue, who says he has been as far up the White Nile as any of those who preceded him, gives it as the joint conviction of himself and his fellow-traveller, M. Rollet, that the White Nile is no other than a continuation of the Niger (by which M. Jomard supposes is meant a river called the Bahr-el-Esoued, or Black river), thus making the Bahr-el-Abiad to come from the west, while the late expeditions make it come from the south, and M. d'Abbadie and Dr. Beke's informant, Omar, from the east! But it is not to the White River alone that M. d'Abbadie has directed his attention: he likewise visited the source of the Abai, the Nile of Bruce, and determined its elevation by the boiling of water, in the same way as had been done two years previously by Dr. Beke. The results come to by the two travellers so closely coincide that the absolute height of the head of this one of the many sources of the Nile may be regarded as fixed at about 9000 feet (according to Dr. Beke, 8975 feet; according to M. d'Abbadie, 9206). It may be remembered that Bruce estimates it at upwards of two miles, or about 11,000 feet. While on the subject of this part of Africa, I cannot avoid announcing that M. Rochet d'Héricourt has furnished the Geographical Society of Paris with some of the results of his last visit to Abyssinia, where, being well supplied with instruments, he was enabled to make more satisfactory observations than when he first travelled into that country. Among other geographical facts he states

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positively that the Lake Zuwai, or Zowaja of our maps, is in no way connected with the Hawath, its outpouring going to the Abai. He has ascertained barometrically the amount of depression of the Lake Assal below the level of the sea to be 217·7 met., or 714 feet, differing only by 46 feet from the depression ascertained by Dr. Beke, who first discovered and announced to us this singular fact, and who took the depression by means of the boiling of water. But to return to M. Rochet: not the least valuable fruits of his journey are the different grain seeds which he has brought from Shoa, some of which, it is to be hoped, may be acclimated in Europe, and thus increase the number of cereales used as food by man.

M. Jomard also, in a pamphlet entitled "*Observations sur le Voyage au Darfour*," translated by Dr. Peron, from an account given by Cheykh Mohammed-el-Tounsy, of that quite unknown portion of Africa visited by Brown in 1794, but not explored by him in consequence of his forced detention and sickness, discusses at some length the still unsolved problem of the White Nile, and is distinctly of opinion that one of its sources is to be found in Darfour, and others in the south-west. There appear indeed to be many tributaries to the White Nile in its upper portion, but in the present imperfect state of our knowledge regarding them it is quite impossible either to determine their number, and the direction of their course, or to say which is in reality the main stream. Let us hope that the fourth expedition, which M. Jomard mentions as about to be sent by the Pasha of Egypt to the head-waters of the great African river, will do much to clear up the uncertainty that has for so many years hung upon the question of its source.

Languages of Abyssinia.—Before quitting this part of Africa I am bound to notice the valuable contributions made by Dr. Beke to its ethnology. He has collected vocabularies of thirteen languages:—1, The Hhāmara, or Agau of Wāag; 2, Falāsha; 3, Agāwi, or Agau of Agaumider; 4, Gafat; 5, Gongga; 6, Kaffa; 7, Worātta; 8, Wolāmo, or Wolāitsa; 9, Yangara; 10, Shāukala of Agaunider; 11, Galla of Gúderu; 12, Tigre; and 13, Hārrargie (Hurreor). They will be found printed in the '*Transactions of the Philological Society*.' They are by no means all equally complete, but great praise is due to Dr. Beke for what he has done; for when we consider what an essential element language is in our determinations of the origin and dispersion of races, we cannot be too grateful to those who allow no opportunity to slip of making us acquainted with the languages and dialects of distant tribes.

MADAGASCAR.—M. Le Guillain, we understand, is gone on a mission to Madagascar, and he has been supplied with instructions for making

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MADAGASCAR.—M. Le Guillain, we understand, is gone on a mission to Madagascar, and he has been supplied with instructions for making

observations on the animal and vegetable productions of the island. Several botanical collections have already been made at the island; but as there is no doubt a great deal yet to be gleaned, and as its fauna presents some remarkable varieties, the result of M. Le Guillain's labours will no doubt present much new and interesting information on the subject in question.

In the bulletin of the Geographical Society of Paris will be found an article on Madagascar by M. Bona Christave, destined to accompany a map of the island, published by the Minister of Marine. The author, after explaining the difficulties which stand in the way of a complete description, physical and moral, of the island, enumerates the authorities whence he has drawn his materials. He then proceeds to describe briefly in succession the nineteen provinces of the island, enumerating their several capes, bays, mountains, rivers, villages, forests, &c., and the islands on their coasts. It is indeed a kind of index to the map. But every thing relating to Madagascar is interesting, on many accounts; and we anxiously await the publication of M. Eugene de Froberville, who has for a long time been engaged on the geography, the history, and the ethnography of that important island.

WEST COAST.—We have been informed by a letter from Mr. Jamieson of Liverpool that Captain Becroft (Now Governor of Fernando Po) and Dr. King have returned down the Niger from Rabbah, which, in consequence of wars among the native chiefs, is now deserted and in ruins. Hence the mission had not met with the anticipated success. It is intended that two more ascents of the river shall be made; and that the Congo, and perhaps the Gaboon, will be explored. Dr. King, under whose direction these expeditions are placed, and whose detailed account of the ascent of the Calabar is published in our Journal, will, in all probability, should he, as we sincerely hope, return in safety, draw up an account of his proceedings, with which we may hope to be favoured by Mr. Jamieson, and to which communication we look forward with much interest.

We learn from the bulletin of the Société de Géographie of Paris that the Abbé Boilat, a native of Senegal, educated in France, has returned to his native country, and sent from thence various memoirs of great interest. We notice this the more particularly as, among the several methods that have been proposed or attempted for the civilization of Africa, none has appeared to us so likely to be attended with beneficial results as the instruction of natives, who, returning among their own people, enlighten them as to the beneficent intentions of Europeans in their behalf, and overcome those prejudices and superstitions which result from ignorance: such persons would open and smooth

the way for the traveller, whose efforts would then be attended with much greater success.

M. Raffenel of the French Navy, employed at Senegal, has made a proposal to the government to penetrate into the interior of Africa. M. Raffenel's memoir on the subject has been submitted by the Minister of Marine to the Geographical Society of Paris for their opinion, and the result has been favourable to the views of M. R., who has been furnished by the Society with instructions for his guidance in scientific research. Later accounts, however, say that from the conditions under which M. Raffenel's journey will be performed, it will be nearly impossible for him to profit by those instructions.

ALGERIA.—While the French armies in Algeria are fighting for the possession of the country, it is pleasing to turn our attention to the quiet labours of science, which the French never lose sight of in their foreign campaigns. Thus there has been sent home by M. Don the observations for rain from the 1st January, 1838, to the 31st December, 1845, showing the mean quantity that falls in that part of the world to be 880·1 millimetres.

GREAT DESERT.—Mention is made in the 'Athenæum' of the 7th March of an African exploration undertaken by Mr. James Richardson. It appears that on the 23rd of November, 1845, Mr. Richardson was at Ghadames, in the Great Desert, where he had been residing for three months; and whence, in company with a negro and a Moorish servant, a Ghadameite, he intended proceeding due south, through Ghat, Abeer, Damerghon, and Karnac to Sacatou, the capital of Sudán; and if he should resolve on returning from this latter place it would be by the way of Bornou and Fezzan. His desire, however, was to visit Timbuctu. Mr. Richardson's enterprise is looked upon as foolhardy and desperate. He has been advised against it, but his resolution was not to be shaken. We very sincerely wish his daring enterprise may be crowned with that success of which perhaps we can hardly entertain any legitimate hope.

NORTH AMERICA.

We have been favoured this year, by Mr. Edward Everett, late United States Minister at our Court, with a volume containing the Reports of Captain J. C. Fremont's two Expeditions to the Western Countries of North America, the first of which, that to the Rocky Mountains, was already known to us, and has been noticed by your late President; of the other, that to Oregon and California, the Report is much more voluminous, and in all respects more interesting, as it will be found to contain not only a great number of astronomical determinations of

places, but many meteorological observations, independent of the description of the parts of the country gone over and its productions. The volume is accompanied by a large map, in which is laid down the features of the country along the lines traversed in the two expeditions; and there is also a profile of the country from the mouth of the Arkansas to the Pacific.

One of our most intelligent members, Mr. Thomas Falconer, has published a very valuable and highly interesting little work, entitled, 'On the Discovery of the Mississippi, and on the South Western, Oregon, and North Western Boundaries of the United States.' In this condensation of valuable information the reader will find an interesting account of M. de la Salle, whose travels and explorations in North America led to the colonization of the fertile valley of the Mississippi, now the seat of a thriving and extensive population. As regards the Oregon question, it is foreign to our purpose to enter into its political consideration; we will therefore merely state that it is fully discussed in the works of Mr. Falconer and of D. Travers Twiss, D.C.L.

It may be mentioned that the late Rev. Thomas Falconer, of Christ Church College, Oxford, editor of 'Hanno's Voyage,' and one of the original members of this Society, completed, shortly before his death, an English translation of the 'Geography of Strabo.' Arrangements have been made to correct this translation by the excellent Greek text of M. Gustave Kramer. The printing of the first six books will shortly commence, and the subsequent ones will follow as the future volumes of Kramer appear.

Mexico.—When we consider the rapid succession of political commotions which have agitated Mexico, we can hardly expect that much attention can have been paid to geography. We are, however, happy to learn that there exists the hope of a better future for that so long distracted region.

A new Map of the Department of Vera Cruz is on the point of being published. It has been constructed by the Military Staff from data furnished by different persons who take an interest in the subject, and engraved in the United States by an inhabitant of Vera Cruz at his own expense. It has just reached Vera Cruz, and will be sent to Mexico before it is made public. Of this map our valued corresponding member, Don Juan de Orbegoso, says he hopes to be able to forward to us a copy.

Not a single work on geography or travels has appeared, and no trigonometrical surveys have been executed or even projected. Nevertheless, some impulse has been given to geographical knowledge, as a military commission for statistics and geography, whose labour had been

suspended for a time, has resumed and continued its operations since last January, and has made some progress in a General Map of the Republic, working at the same time on a Geographical Dictionary, and on the statistics of various departments. Let us hope that this and other the peaceful labours of science may, for the benefit of the Mexicans themselves, and for the general interest of improvement, replace the agitation which has so long convulsed their very interesting country.

SOUTH AMERICA.

Brazil.—We learn from a notice in the 'Athenæum,' that the Rev. Daniel P. Kidder has published 'An Account of his Residence and Travels in Brazil,' which work we are told has the great merit of rectifying many of the errors, geographical and statistical, which have been published in works enjoying some reputation.

Bolivia.—The Bolivian Government having commissioned a French gentleman to explore the affluents of the River Plate, with a view to improving its navigation, the Minister of Public Instruction at Paris has invited the Academy of Sciences to draw up a set of instructions for the traveller, in order that his explorations may be made generally beneficial to science and to physical geography.

An account of the attempt made, under the directions of the Bolivian Government, to open a communication with the River Plate, by descending the River Pilcomayo to its confluence with the Paraguay, and the failure of the expedition owing to the shallowness of the bed of the river, which was finally lost among extensive inundations, was lately read to you at one of the evening meetings.

Buenos Ayres.—From our foreign member, Don Pedro de Angelis, our suspicion is unfortunately confirmed, that the troubled state of the country has impeded the labours of geography as of other sciences; thus our zealous correspondent says that his efforts to make known the geographical and historical relations of the country have been paralyzed by the late political events. He has, however, obligingly favoured us with a collection of documents just published, relating to the mission of Messrs. Ouseley and Deffandis, the result of which has been very different from what was expected.

Some addition to our knowledge of the upper portion of the great rivers Parana and Paraguay, and their principal affluents, may however be expected from these events, as one of the British steamers-of-war is said to have ascended the River Paraguay as high as the city of Assumption.

AUSTRALIA AND EASTERN ARCHIPELAGO.

Since our last Anniversary different publications of merit have appeared relating to Australia and the Indian Archipelago, and fresh explorations in the former have been undertaken. My predecessor in this chair, in his Anniversary Addresses in 1844 and 1845, dwelt with peculiar emphasis on the great importance of Port Essington, and strongly advocated an *exhaustive survey* of all those seas, straits, and gulfs, as yet but imperfectly known, of the Great Eastern Archipelago, from the China Seas to Torres Straits, including both; and we have seen, in speaking of our maritime surveys, that to the labours of Captain Sir E. Belcher, Captain Collinson, and Lieutenant Bate, we are already indebted for a very considerable increase to our knowledge of the China Seas, while Captain Blackwood and Lieutenant Yule are diminishing the dangers of the passage through Torres Straits by their accurate survey of those great Barrier Reefs that impede the passage of this direct maritime highway between our important colony of New South Wales and India.

Of Port Essington the importance is indeed great; and if, as we are disposed to believe, a practical overland route, between Sydney on the S., and that part of the N. of the Great Australian Continent, could be discovered, that importance would be greatly enhanced, although the dangers of the navigation along the E. coast of Australia will be no longer dreaded, since the labours of Captains Stokes and Blackwood have shown the facility with which steamers may now effect the passage by keeping *within* the Barrier Reef. 'A Particular Account of Port Essington' has just been published by Mr. Windsor Earl, than whom none has had better opportunities, or more ably profited by them, of acquiring a thorough knowledge of the subject. To Mr. Earl's volume we confidently refer those who would not only learn the history of that settlement, but acquire a knowledge of all its capabilities. Already has a party of enterprising pioneers, under the guidance of Dr. Leichardt, started for the discovery of an overland route from Moreton Bay to Victoria, and great has been our anxiety for their fate, in consequence of the sinister reports which reached us. Happily our fears for their safety have been in part dissipated. A party, consisting of Mr. C. Pemberton Hodgson, and others, went in search of them, and having come upon their trail, followed it to a point in 25° N., and $148^{\circ} 47'$ E., *i. e.* beyond the spot where Dr. Leichardt and his party were said to have been murdered or to have perished. Every circumstance met with was indicative of their safety, and perfectly satisfied of this Mr. Hodgson and his companions returned, leaving us in hope of Dr. Leichardt's

final success, though, when we consider the immense distance they had yet to travel over a region perfectly unknown, we cannot be free from all apprehension till we hear of their safe arrival at Port Essington. Other explorations have also been undertaken. Thus of Captain Sturt's expedition, of which mention was made in the last Address, has a report since received been read to you; it describes his route from Morundee to Laidly's Ponds, whence, taking a N.W. direction, he attained to the lat. of $29^{\circ} 40' 11''$ S., and long. $141^{\circ} 31'$ E., from which place he has sent back a portion of his people, and intends pursuing his explorations towards the interior.

You have also been made acquainted, through the kindness of Sir Charles Malcolm, with the enterprising journeys of Mr. Scott Russell and his friends, and of their discovery of a large river, the Boyne, and of what they consider the upper course of the Condamine.

In connexion with this subject of Australia, I must not omit to mention the works of M. de Strzelecki, of Mr. Eyre, and of Mr. Braim. With regard to the first, its importance has been deemed such as to entitle the author to the award of one of our Gold Medals; and having already, in carrying out the intentions of the Council by presenting the Medal to M. Strzelecki, recapitulated that gentleman's labours, I need no further dwell upon them in this place.

With regard to Mr. Eyre's work, it contains, in addition to the account of that gentleman's travels in Australia, which were rewarded by this Society, some very interesting ethnographical details.

The work of Mr. Braim is indicated by its title, 'The History of New South Wales, from its settlement to the close of 1844.'

If the interior of Australia presents one of the most interesting of geographical problems, a knowledge of the coasts of that immense island is of primary importance; and accordingly the Government, anxious that they should be accurately surveyed, despatched the *Beagle*, under the command of Captain Wickham, not only with a view to ascertain whether any large rivers emptied themselves into the sea, by ascending which the interior of the country might be explored, but in order to point out the various reefs, rocks, and shoals which obstruct or endanger the navigator's route; to describe the currents and prevailing winds which may favour or retard his progress, and the anchorages, soundings, bays, &c., where he may find a sure refuge, with supplies of water, of provisions, and of fuel.

The vessel, after touching at the Cape, where she left Lieutenants Grey and Lushington, on their way to Australia as inland explorers, reached the W. coast of New Holland, at the Swan River, in November, 1837, from which time to May, 1843, a period of nearly six years, the

Beagle, first under the command of Captain Wickham, and subsequently under that of Captain Stokes, has twice made the round of the Australian continent, affording ample opportunity to her gallant commanders and crews for displaying that skill and perseverance for which the navy of our country is so conspicuous.

Of the Beagle's surveys we have from time to time heard something, but it was reserved for Captain Stokes to be the historian of those labours in which he first took so active a part under Captain Wickham, and which he subsequently himself directed. As it would be impossible, in the very short notice to which I must necessarily restrict myself in this Address, to give even an abstract of the many interesting facts brought to light by the Beagle's surveys, I must content myself with merely stating that from Swan River the ship proceeded to the N.W. coast, the configuration of which had led to the supposition that in this neighbourhood some large rivers disembogued into the sea. Commencing at Roebuck Bay, the coast was minutely examined as far N. as Port George IV. The result of this cruise was the discovery of Fitzroy River, and the addition of a tract of 300 miles of new country to our geographical knowledge. The next scene of operation was the W. entrance of Bass's Strait, after completing the survey of which the Beagle passed up the E. coast, examining on the way various openings and unexplored portions of the coast, and improving the existing charts of the track within the great barrier-reefs. Passing through Torres' Strait, Port Essington was visited; and in the examination of Clarence Strait, the discovery was made of Adelaide River and its S. shore. The coast to the W. was also explored for a distance of 60 miles, and found to be deeply indented with bays and openings. About 100 miles farther to the S. the explorer's labours were rewarded by the important discovery of Victoria River, which was examined for 140 miles from its mouth—a discovery which was likely to have proved fatal to Captain Stokes, and to have deprived the country of one of its most zealous and efficient officers. He was treacherously speared by a native at Point Pearce, and by little less than a miracle escaped with his life, adding one more proof to numberless others of the dangers encountered in geographical exploration. It was while taking the longitude of Point Pearce that Captain Stokes received the wound in his chest from the effects of which he still occasionally suffers.

From Victoria River the Beagle revisited Swan River, whence, after refitting, she examined that dangerous cluster of reefs called Houtman's Abrolhos, and the mainland abreast of it. These reefs, it may be remarked, are, with the exception of the Bermudas, the coral formation the most distant from the Equator. From thence the N.W. coast was

examined from the Forester's to Turtle Island. Of the former group, Depuch Island, one of the most remarkable from its size and the very curious and interesting native drawings found upon its rocks, has already been described in the Society's Journal. After going to Timor for a supply of water, which was not to be procured at this portion of the Australian continent, the *Beagle* returned to the coast, and completed the survey from Depuch Island to Dampier's Archipelago, and discovered that the long sought for Tryal Rocks were no other than a patch close to the N. end of Barrow Island. Great additions were made to the chart in this neighbourhood, leaving which the vessel sailed for Sydney, touching at Swan River and Adelaide. At Sydney Captain Wickham invalided, and the command devolved upon Captain Stokes, who again carried the vessel along the N.E. coast, making further discoveries and additions to the charts: the most important of the former was that of finding Endeavour Strait not only navigable for large vessels, but being in fact, as Captain Blackwood's more extended survey has proved, the best passage through that part of Torres Strait. The next important feature in this extensive survey was the exploration of the Gulf of Carpentaria, where Captain Stokes discovered two rivers, the Albert and Flinders, the former of which was ascended for about 60 miles, flowing through a rich alluvial country. The remaining portion of the N.W. coast, between Roebuck Bay and Turtle Island, which indeed had never been before seen, was now explored, and found to be a low, monotonous, and uninhabited waste. The country lying at the S. foot of Moresby's flat-top range, which had been erroneously reported to be a fine country, was found, on the contrary, to be a sterile tract. Holdfast Bay and Port Adelaide formed the next portion of the *Beagle's* labours, which terminated by the survey of the S. coast of Tasmania and the remaining portion of Bass's Strait. This part of the work was very materially expedited by the liberality of Sir John Franklin in lending the assistance of a colonial vessel.

The full value of the *Beagle's* surveys is more and more appreciated as our colonial settlements in Australia and our relations with the islands of the Eastern Archipelago acquire extension. The passage along the E. coast of Australia, now proved, by the labours of Captain Stokes, to be not only practicable, but perfectly free from danger, together with the survey of Captain Blackwood of Torres Strait, open up a new era in Eastern navigation; and we may predict that ere long this line will be a much-frequented high-road between India, China, and the Archipelago, and Sydney and Tasmania. The so long dreaded passage of Torres Strait presents a free passage, while the fringing reefs of the eastern coast form a natural breakwater, between which and the land steamers may

pursue their course, not only in safety over a distance of 1000 miles, but in the enjoyment of some of the most picturesque scenery.

To Captain Stokes's narrative is added the journal, full of interest, of visits to the islands of the Arafura Sea by that intelligent officer Captain Owen Stanley, who, we have much satisfaction to learn, is about to be appointed to the *Rattlesnake*, for completing the survey of Torres Strait and New Guinea. But, however reluctantly, I must pass on to other objects, merely adding in conclusion my hearty recommendation of Captain Stokes's book. In it will be seen what eminent services have been rendered to our Eastern navigation by Captains Wickham, Stokes, and Stanley, assisted by their zealous officers and men; and while we recommend this work for the sterling value of its information, we cannot refrain from expressing the gratification we experienced from the style and manner of its author, which are everything that can be desired in a work of this nature, and are highly creditable to Captain Stokes's literary acquirements. If anything be wanting to render the work complete, it is perhaps the collection in the Appendix of the results of the several astronomical and meteorological observations that are dispersed throughout the book. The value of the work is greatly enhanced by the beautiful and accurate charts which accompany it, particularly the chart of Bass's Strait.

We cannot leave this subject without adverting to the routes of inland exploration in Australia proposed by Captain Stokes, as indicated on his general map of that country. These routes not only pass over portions of the island of great interest from their position, but are of such a length as to render the success of their complete exploration almost certain.

Returning now to the northward, the first object which fixes our attention is the no less valuable than successful enterprise of one of those extraordinary men who seem fated to achieve more by their own energies and ability than is often effected by a combination of numbers and power. It is in the work of Captain Keppel, entitled '*Expedition of Her Majesty's Ship Dido against the Pirates of Borneo*,' that we learn to estimate the character of Mr. Brooke, while we are taught to appreciate not only what he has already done, but the immense advantages that may accrue from the position in which he has placed himself. Assisted by the powerful influence of the Rajah of Sarawak (Mr. Brooke's present title), and protected by the British Government, whose agent he has been constituted, our enterprising countrymen may settle quietly in Borneo, and derive from its rich, varied, and abundant produce the means of a most beneficial and lucrative commerce, while they extend the markets for our own productions. The discovery of coal in abundance, of good quality and easily procured, at the very spot where, if we had to choose,

we should place it, will prove of immense benefit to our steam navigation of the Eastern seas. But great as are all these advantages of Mr. Brooke's enterprise, they have been rendered available chiefly by the destruction of those hordes of pirates who for so many years have with impunity infested the islands of the Archipelago and obstructed commerce. In the important service of their destruction, Captain Keppel and his brave officers have taken the chief part; and in the narrative from which we glean our notice, we hardly know which most to admire—the eminent services of the gallant Captain, or that retiring modesty which has led him in his narrative to speak so little of himself. The next work I shall mention is the interesting volume of Mr. Davidson, entitled '*Trade and Travel in the East*'—a volume which, though made up of reminiscences, is full of valuable information on Java, Singapore, the Dutch settlements, and China.

MISCELLANEA.

1. The subject of a passage across the two Isthmuses of Suez and Panama has been often discussed: and as you are aware, Gentlemen, a great many levels have been taken over different parts of these two necks of land, which, by opposing barriers to direct navigation, compel vessels to make long and often dangerous circuitous voyages. It is not my intention to go into the reasons which have hitherto prevented the adoption of any of the proposed lines, either for canals or roads; but it would appear, in France at least, the subject has not lost its interest, inasmuch as a note has been addressed to the Academy of Sciences on the necessity of revising the levels that have been made over the two necks of land, in consequence of errors discovered in former operations. With regard to the Isthmus of Panama, however, the line of steamers now established from Panama to all the ports of the South Pacific, as far as Valparaiso, will give easy access to those countries to the traveller, whether in search of scientific knowledge or commercial enterprise.

2. We have already alluded to the formation at St. Petersburg of a Geographical Society. We have the additional satisfaction of announcing the establishment of a similar society at Darmstadt; and when we consider the persevering research for which the Germans are remarkable, we may fairly anticipate that while the attention of other countries possessing a large mercantile navy and extensive colonial relations is more exclusively turned towards exploration, the German geographers will devote their efforts to a careful sifting of the immense accumulation of the facts of geographical science already existing, so as to separate the more from the less interesting, and by their juxtaposition and compa-

riſon eſtabliſh data and conſtants of the higheſt importance to an accurate acquaintance with the globe we inhabit.

Physical Geography.—The importance of physical geography has frequently been inſiſted upon by former Presidents of this Society: it is, indeed, the baſis of all geography—that upon which reſts the practical importance of the whole ſcience we profeſs to cultivate. To define it is difficult: the great Humboldt himſelf, in his ‘*Cosmos*,’ inſtead of attempting to do ſo, explains through a couple of pages the objects of which it takes cognizance, and to which it is limited. Many of the facts of physical geography are ſuſceptible of graphical representation, and are thus made to take ſtrong hold on the memory of ſuch as are ſufficiently intereſted in the ſubject to ſtudy theſe delineations. What Mr. Greenough ſaid when he ſo admirably characteriſed the importance of good maps in the ſtudy of poſitive geography, may with equal truth be applied to the ‘*Atlas of Physical Geography*’ published by Berghaus, and now, through the enterpriſe of Mr. Alexander Keith Johnson, of Edinburgh, preſented to us in an Engliſh dreſs. Four parts, containing nine maps, have already appeared; and thoſe who have ſeen them will confirm the opinion that, if completed as it is begun, the ‘*Physical Atlas*’ of Meſſrs. Berghaus and Johnson will not only conſtitute one of the greateſt ornaments to a ſcientific library, but be regarded as an indiſpenſable work to all who would have a correct notion of the great physical features and phenomena of our earth. The beauty of the execution of Mr. Johnson’s maps is commensurate with the intrinsic importance of their matter. When ſuch works are published for the furtherance of our ſcience, we are happy to announce them with the praiſe which is their due, and we heartily wiſh that Mr. Johnson may reap the juſt reward of his enterpriſe by a large ſale.

While on this ſubject of physical geography, I cannot but regret that we poſſeſs no complete and ſatisfactory work on the ſubject in our language. The ‘*Cosmos*’ of the celebrated Humboldt, already mentioned, and of which we underſtand a good translation into Engliſh is now preparing, will, no doubt, expoſe the great features of the ſcience in that maſterly and comprehensive manner ſo peculiar to its author. We cannot now ſpeak of it; and when the translation in queſtion ſhall be put within our reach, we ſhall be more diſpoſed to receive the judgments of our maſter with ſubmiſſive reſpect than queſtion their validity. Sound judgment is as much ſhown in the acknowledgment of ſuperior genius as in attempting to diſpute it.

But while we regret the want of maſterly Engliſh works on physical geography, we have ſome conſolation in believing that this ariſes not from want of native talent, but from the comparative newneſs, if I may

use the term, of the science itself in this country. When the facts and important bearings of the science shall be sufficiently known and appreciated, we do not doubt that master minds will be found among us to do it full justice. In the mean time attention must be drawn to it as an important branch of education, and its first notions be rendered popular. With this view, some works of small extent, but of very considerable merit, have at different times been published, to which I would call attention, as highly worthy of it. First among these popular works I would mention four small volumes entitled 'The Earth, the Heavens, the Air, and the Sea,' by the late Mr. Robert Mudie. This work, though evidently written for the young, may be studied with great advantage by men of riper years. The abundance of facts it exposes, and the general considerations which result from them, display a great acquaintance with the subject, and a mind of no ordinary stamp. There are two other small works by R. M. Zornlin, entitled—one of them, 'Recreations in Physical Geography;' and the other, 'The World of Waters:' and still more lately two little volumes have been published by our worthy member Mr. Wittich, under the title of 'Curiosities of Physical Geography.' The ability displayed in these several publications is great; and although there is less of generalization in the latter-named works than in that of Mr. Mudie, they are interesting compilations, and their appearance is a sign of a growing interest for physical geography, which we cannot but hail with pleasure as the forerunners of more important labours in one of the most delightful and important fields of knowledge.

Elementary works are too often neglected as beneath notice; we are, however, of opinion, not only that they are of the greatest importance, but that they require, in order to be well digested and really useful, much greater ability than their compilers are apt to get credit for. A great deal in the pursuit of science depends upon the early impression we receive in the study of its rudiments: when these are confused and repulsive they too frequently repress the desire for acquaintance with the subject; but when, on the contrary, they are clear and rendered attractive, they stimulate the wish for information, and thus pave the way for complete knowledge. Such an elementary book has lately been published by Mr. Gilbert, under the title of 'Geography for Families and Schools,' which I have much pleasure in recommending to those of our members who are desirous that their children should be informed on the science they themselves cultivate with such predilection.

Arctic Expedition.—The reasons for undertaking another Arctic expedition, and making a further attempt to accomplish a North-West passage, after the several unsuccessful efforts already made, were so

thoroughly explained in the Address of my predecessor in this chair, at the last Anniversary Meeting of the Society, and the route it was to take was so clearly pointed out, that nothing further remains to be said upon the subject. The last information received from the expedition stated them to be at White Fish Island, E. coast of Greenland, in $69^{\circ} 9' N.$ and $53^{\circ} 10' W.$, all well. Pending the result of the undertaking, all we can do is cordially to wish it every success, and that the gallant commander, Sir John Franklin, and his excellent officers and crew, may all return in safety, crowned with fresh laurels. In the mean time we have great pleasure in learning that our enterprising countryman has been elected a Corresponding Member of the Academy of Sciences at Paris, for the section "*Géographie et Navigation*," in the place of M. de Guines, deceased.

Georama.—I must not pass unnoticed the Georama which M. Guérin proposes to erect in this capital to enable students in geography to obtain through its means, in a few visits, more correct ideas of the extent of the several regions of the globe, and the geographical relations they bear to each other, than can otherwise be obtained by long study.

The Georama of M. Guérin is an immense hollow sphere, in the centre of which the spectator stands, and looking around him sees every country of the world in its true proportional dimensions and form, and its correct relative position. The value of the Georama was so highly appreciated by the Geographical Society of Paris, that the French Government granted to M. Guérin a piece of ground in the Champs Elysées sufficient for its erection, where it is now open to the public. The French Georama is about 30 feet in diameter; but that which it is proposed to erect in London will be about 60 feet in diameter—a size which will admit of the introduction of more detail and many improvements.

The project of M. Guérin has received the sanction of the names of the President of the Royal Society and many others distinguished in various branches of science.

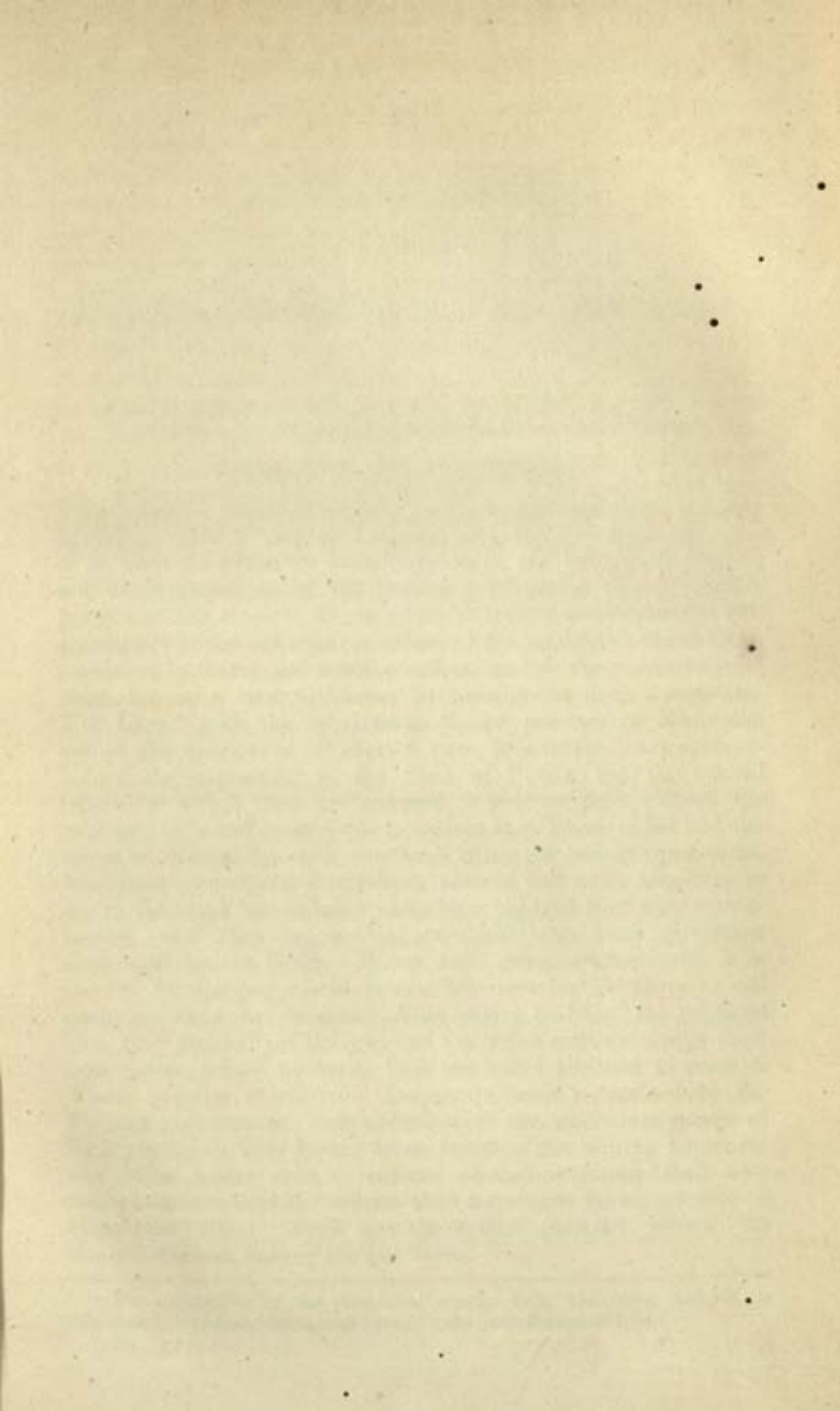
CONCLUSION.

Permit me, Gentlemen, in conclusion, to say a few words on the present state and future prospects of our Society.

The hope expressed by your late President at the last Anniversary, that the Government might be induced to grant to the Society apartments in some public building, is not, I regret, likely to be *at present* fulfilled; as, from a communication recently received from the Chief Commissioner of Woods and Forests, although the value of this Society

is there fully recognised, yet it appears the demand for buildings required for additional public offices prevents any immediate prospect of a purely scientific Society obtaining any which might otherwise have become vacant. We must therefore be prepared, at the expiration of the lease of these apartments next year, to provide others at the expense of the Society's own funds.

In all other respects I may congratulate you on our prospects.. The Society is free from debt, and we may fairly hope that the new financial measures which, after ample discussion, you adopted at the late General Meeting, will enable the Council at no distant day again to grant that assistance to explorers which prudential motives had obliged them for some years past to discontinue. The increased accession of members to the Society, on which your President remarked at the last Anniversary, has been maintained, forty new members having been admitted during the past year. Mr. James Alexander has renewed for a fourth time his munificent donation of £50 to the Society—an example which I hope will not be set in vain to those who, like himself, possessing ample means, think they cannot be more usefully employed than in promoting science; and I trust that every member will be animated to endeavour, in the mode most suited to his ability, to strive to increase the numbers and add to the efficiency of the Royal Geographical Society.



PAPERS READ

BEFORE THE

ROYAL GEOGRAPHICAL SOCIETY.

I.—*A Description of the Province of Khúzistán.* By A. H. LAYARD, Esq. Communicated by LORD ABERDEEN.

Political Condition and Divisions.

THE extensive chain of mountains, anciently known by the name of Zagros, now by that of Luristán, and the districts to the west of it, have for centuries been less under the immediate control and superintendence of the Persian government than any other portion of the empire: this is owing to several circumstances, but principally to the inaccessible nature of the mountains themselves, inhabited by brave and warlike tribes, and to the plains beyond them having a natural barrier to invasion in those mountains. The Lurs,* with the inhabitants of the province of Khúzistán and of the districts of Behbehán, have, it is true, always acknowledged the supremacy of the Sháh of Persia, but the annual tribute at which they are assessed, is seldom paid without the presence of a sufficient force to collect it. These tribes and the towns of Khúzistán, with the Arab tribes dependent upon them, have their own chiefs, members of ancient and noble families, by whom that rank has in many cases been enjoyed from time immemorial, and they are seldom troubled with local governors appointed by the Sháh. When such governors are sent, it is usually for the purpose of raising the revenue for the year and such arrears as may be due. After having collected the required sum, they generally withdraw, and the tribes continue under their own chiefs, whose authority they are more inclined to respect. These popular chiefs have frequently been recognised by the Persian government, and armed with the additional power of local governors, they having been found, when willing to accept this office, better able to enforce obedience among their own tribes and to collect the tribute than a stranger having no *natural* claim upon them. Such was the system generally pursued by the government during the last reign.

* The inhabitants of the mountains, whether Feili, Bakhtiyári, Kúhgelú, or Mamesenni, are known throughout Persia by the general name of Lurs.

The country which I am about to describe may be divided into the mountains and the plains. This division is remarkably palpable and defined, both with regard to the physical geography of the country and to the origin, manners, customs and even language of its inhabitants.

The great tribes inhabiting the mountains are the Lurs, generally known by the name of Feili, Bakhtiyári, Kúbgelú, and Mamesenní. They occupy that portion of the chain which extends from the vicinity of Kirmánsbáh to the immediate neighbourhood of Shíráz. The extensive plains which stretch to the west of the mountains, contain the districts of Shushter, Dizful, Hawízah, Behbehán, and the country of the Cha'b* and Bení-Lám Arabs.

The Bení-Lám Arabs occupy a part of the Turkish territory; but as they frequently encamp within the Persian boundaries, and are so intimately connected with the province of Khúzistán, I have included them in the description of the tribes inhabiting the west of Persia.

The country hereafter described is principally the province of Khúzistán, the true limits of which cannot, however, be determined with precision. The modern boundaries, as at present recognised by the government, probably differ in many respects from the ancient boundaries of that country.

The following are at present generally considered as its proper boundaries:—To the N. and N.E., the mountains of the great chain on which the first snow usually falls. To the W. the river Kerkhah; although the pastures on its western bank are inhabited by tribes under the Wálí (governor) of Hawízah, and are usually considered as Persian ground. To the S., the Jerráhi or Kurdistán River, and a line drawn across the desert from the Kárún or Kuran to the Kerkhah, a few miles above the junction of each of the rivers with the Shaṭ-el-'Arab or Euphrates. To the E. the Kurdistán. Within this province, therefore, are included the towns of Shushter, Dizful, and Hawízah, the plain of Rám Hormuz, the Bakhtiyáris, part of the Feili and part of the Cha'b Arabs: the latter tribe, however, have hitherto been assessed by the governor of Fárs. Behbehán, although in our maps included in the province of Khúzistán, is properly in that of Fárs.

The largest tribes occupy the district of Luri Kutchik† (*i. e.* the little Lurs), and are known by the general name of Feili.‡

* The name of this tribe is pronounced as I have written it, both by themselves and in Khúzistán, although the proper pronunciation and orthography is Ka'b. The Arabs to the east of the Shaṭ-el-'Arab usually pronounce the k as ch, saying *chebír* for *Kebír*, &c.

† Or Kúchuk.—F. S.

‡ Major Rawlinson observes, in his '*Notes on a March from Zoháb to Khúzistán*,' (*Journ. of the R. Geogr. Soc.*, vol. ix., p. 52), that the tribes of the Pushtí Kúh alone

The tribe itself is divided into the Pish-Kúh and the Pushti-Kúh, or that portion which is before, and that which is behind the mountains, and these divisions contain numerous sub-divisions. The table, No. 1, given at the end of the Article, is corrected and enlarged from that given by Major Rawlinson in the 'Journal of the Royal Geogr. Soc.,' vol. ix. p. 107.

The great branch of the Pish-Kúh is divided into four tribes, each of which has numerous subdivisions. It is without a supreme chief having power over the whole body, but each tribe, and almost each subdivision, has its own particular head or *Tushmál*, who acknowledges no other authority than that of the Sháh, when he is able to enforce it. It is owing to this circumstance, and to their residing in the vicinity of the large towns of Kirmánsháh, Burújird, and Khurram-ábád, that the tribes of the Pish-Kúh are more under the control of the government than those of the Pushti-Kúh. While the latter recognise the authority of the Wálí of Luristán, the former are placed under a local governor sent either from Kirmánsháh or Isfahán. During my residence in Khúzistán, Hájí Mullá Ahmed was employed by the Mo'tamid* in collecting their revenues. The tribes, however, long resisted his authority, and several were in arms against the government; but their want of unity rendered them totally unfit to oppose the Hájí, who by means of intrigue alone, soon succeeded in collecting a large sum of money.

Major Rawlinson observes in his 'Notes' † that 'some four or five Tushmáls are usually associated in the government of every subdivision; and on great occasions, also, these Tushmáls meet as equals and consult; so that their internal constitution—which I believe to be very uncommon among the clan nations of Asia—more nearly assimilates to the spirit of a confederated republic than to that of a great feudal aristocracy.' This is not, however, exactly the case; the Lurs of the Pish-Kúh do not in fact differ from the other inhabitants of the mountains. The system pursued is the same throughout the whole of the tribes in Persia. Each tribe has its chief, who exercises an unlimited authority over its members. ‡ The tushmáls are merely chiefs of families or of subdivisions, who are employed in collecting the tribute, and are considered responsible to the chief for the good order and allegiance of those placed under their care: they may resort to any means they think proper in raising this tribute, and may

are known by the name of Feilí throughout Persia; moreover, all the tribes of Luri Kutchik are called Feilí, and among the tribe themselves I have always heard that name used.

* Minister; literally Sustainer of the Government. It is commonly pronounced Ma'tamet.

† Journal of the Royal Geogr. Soc., vol. ix. p. 109.

‡ Like the Sheikhs of the Arab tribes.—F. S.

imprison or even put to death those who belong to the division over which they are placed; but they are accountable to the great chief for that part of the tribute apportioned to their division, and must follow him in his wars when he needs their services. It is upon these conditions that they hold their power as tushmáls; and if these are neglected they may be immediately displaced: the constitution of these tribes bears, in fact, a very strong resemblance to feudalism. The chief himself accounts with the government, and is left to raise the tribute through his tushmáls.

The four tribes of the Pish-Kúh are generally at war with each other. They are notorious for their plundering propensities, particularly the Dillán and Sflah-sflah. The country they inhabit can seldom be traversed in safety either by single travellers or caravans.

The tribe of Dillán furnishes 800 men, who form the Luristán regiment. Of this number 300 are raised from the subdivision of Yíwetiwand, 400 from that of Múmináwand, and 100 from that of Reisáwand.

The members of the tribe of Dillán are chiefly 'Alí-Iláhís* in religion.

The tribe of 'Amalah,† as the name denotes, were originally employed by the wális of Luristán as their immediate servants. Several of its subdivisions are still called after the services that their members used to perform, as—Mír-ákhúr;‡ Kátirj, head muleteer; Gholám, slave. This name is still applied to that portion of the tribes of the Pushti-Kúh which encamps with the wálí.

The 'Amalah are Deh-Nishíns,§ who cultivate the crown-lands in the neighbourhood of Khurram-ábád.

The tribes of the Pushti-Kúh are under a wálí, whose ancestors were the chiefs of all the Feili Lurs. Hasan Khán, the father of the present wálí, was the last who enjoyed that powerful post. He was, however, vested with authority over the tribes of the Pish-Kúh by the Persian Government, his legitimate right only extending to those of the Pushti-Kúh. Kelb 'Alí Khán,|| who was of the same family, opposed him with some success, but was finally murdered when in the camp of Moḥammed-'Alí-Mirzá,¶ who had by an oath of safe conduct prevailed on the

* Those who believe 'Alí to be an Incarnation of the Deity.—F. S.

† Agents, operatives.

‡ Superintendent.—F. S.

§ Settled in villages.—F. S.

|| This was the chief who murdered Captain Grant and Mr. Fotheringham. His son, Mehdi Khán, is still living, but enjoys no kind of authority over the tribe.

¶ That is the Prince Moḥammed 'Alí. At present when the title of Mirzá—an abridgment of Emír-zadeh, i. e. Noble-born, equivalent to Beg-zadeh, so much used by the Turks, is prefixed, it signifies "Gentleman;" when affixed it means "Prince."—F. S.

chief to join him. Hasan Khán died a few years ago at a very advanced age. His three sons had ejected him from the government of Luristán, and after his death they divided the tribes subject to him. The eldest is 'Alí Khán, who enjoys the chief authority in Luristán. At present the following tribes acknowledge him as their chief:—Kurd, Sháhán, Dínárwand, Lort, Handemení, Sagwand, and Beíránwand; the two latter tribes, however, only when he has power to enforce his authority. Ahmed Khán holds half the tribe of Mehakí; and Haider Khán the remainder, with the tribe of Panj Sitún.*

'Alí Khán, in addition to the tribes above mentioned, possesses the villages of Deh Lurán and Bayát, and extensive pastures in the plains, which are usually inhabited by the Bení Lám Arabs, who pay a small sum yearly for permission to occupy them.

The three brothers are inveterate enemies, and generally at war with each other. 'Alí Khán assumes a regal dignity, and in his black tent affects all the etiquette of a Fet-h-'Alí Sháh. He is little liked by his tribes, and has frequently been guilty of extreme acts of oppression and cruelty. It is only lately that káfilahs† have been able to pass, with any degree of security, through his territories; he is, however, generous and hospitable to travellers. Haider Khán is generally liked by the Lurs; but I believe Ahmed Khán to be the most intelligent and trustworthy of the three. The Government foment the divisions between these brothers, fearing the union of the tribes under one chief.

Of all the tribes, the Sagwands have given the most trouble to the Persian Government. Relying upon the strength of their position, they were for some months in open rebellion, and two regiments could with difficulty succeed in collecting the tribute. Before the arrival of the Mo'tamid in Khúzistán, in the spring of 1841, the whole country was in a most disturbed state, and the roads very unsafe. Caravans were frequently plundered, and the communication between Shushter, Kirmánsháh, and Khorram-ábád by the mountain passes, almost entirely cut off. The country is at present in a more quiet state, and hostages have been given by the chiefs as securities for their future good conduct.

Luri Kuchik‡ was formerly included in the government of Kirmánsháh, but since the removal of the Mo'tamid i-Daulet to Isfahán it has been made over to him.§ The usual residence of

* The five Pillars.—F. S.

† Caravans. This is the Arabic term, sometimes spelt *coffe*.—F. S.

‡ Little Lur.—F. S.

§ The large government of Kirmánsháh, as it existed during the reign of Fet-h-'Alí Sháh when Mohammed Ali Mirzá was governor, suffered much curtailment.

the governor of the Písh-Kúh is either at Khorram-ábád or in the plain of Seimarrah.

It is very difficult to form a correct estimate of the forces that might be raised in Luri Kuchik. The Wálí, 'Alí Khán, may probably be able to collect between 4000 and 5000 men, of whom 500 or 600 are horsemen. Ahmed Khán and 'Alí Khán have each at present about 3000. The Sagwands have about 300 horsemen, who would probably now join 'Alí Khán. The gross amount of armed men that might be raised in Luristán may, perhaps, be between 4000 and 5000 horsemen, and 20,000 matchlock-men. The Feílís pretend to have more respect for an oath, and to be less bloodthirsty than their neighbours, the Bakhtiyáris; but I believe there is little difference in these respects between them. Several subdivisions of the tribes of the Pushti-Kúh have left their mountains, owing to acts of oppression on the part of 'Alí Khán, and have sought refuge in the Dehát, or small villages, dependent upon Dizfúl, settling as rayyats,* and engaging in the cultivation of the soil.

To the south of the Feílís occur the Bakhtiyári tribes, who, with the Kúhgelús and Mamesennis, occupy the districts of Luri Buzurg.† The northern boundary of the country inhabited by the Bakhtiyáris is the river of Dizfúl; the southern, an imaginary line drawn from Deh Yúr, in the plain of Rám-Hormuz, to Felát, near Kumishah, on the opposite side of the mountains. To the east, they encamp in the immediate vicinity of Burújird; in Feridún and Chahár Maháll,‡ within 2 days' journey of Isfahán. To the west, they occupy the low hills, and the upper part of the plains above Dizfúl, Shúshter, and Rám-Hormuz. These tribes differ in many respects from the Feílís: their dialect has more resemblance to the Persian language; a Bakhtiyári would probably have some difficulty in understanding a Feílí. There are no 'Alí-Iláhís among them, while many of their neighbours are of that sect, although they will not openly confess it.

Major Rawlinson's table of the Bakhtiyáris needs a few alterations. The table No. 2 will probably be found more correct.

During my residence in the Bakhtiyári mountains four chiefs ruled over these tribes, and were generally at war with each other; the most powerful, and the one who by the government

Luristán, the Bakhtiyáris, Shúshter, Dizfúl, Hawízah, &c., formerly annexed to it, were added to Isfahán, and Hamadán has a separate governor.

* Properly Ra'íyya, or Ra'íyah, "pastured," "protected," thence "herds," "subjects;" the plural is Ra'íyá. From Ra'íyah and Ra'íyat the Turks have formed the contracted word Rayá; the Indians have their Rayat, spelt by the Anglo-Indians Ryot, but in Turkey this term is exclusively applied to the Zímís or Christian tributaries.—F. S.

† Great Lur.—F. S.

‡ Four districts.—F. S.

was considered the principal chief, was Mohammed Takí Khán. The names of the other three were, Kelb 'Alí Khán, Ja'fer Kulí Khán, and Mohammed Meti* Khán.

The Bakhtiyári tribes are divided into those belonging to the Haft Lang† and those belonging to the Chahár Lang‡. The other tribes mentioned in the table are not included within this division, but are either dependencies or tribes not originally occupiers of the mountains—the Bándúni, however, excepted, who are by the Bakhtiyáris believed to be *aborigines*, and to have inhabited the country before they themselves took possession of it. This tribe has no chief of its own, but some of its members intermix with the Chahár Lang. The Kiyúnurzí alone are said to consist of nearly four hundred families. It is difficult to account for this division of the tribes, and for the names of Haft Lang and Chahár Lang. Many traditions upon the subject exist among the Bakhtiyáris; that most credited is the following:—The Bakhtiyáris, they say, came originally from Shám,§ under one great chief, and took possession of the mountains which they now inhabit. A descendant of this chief had two wives, to whom he was equally attached. By one he was the father of four children, by the other he had seven. At his death the children of these two families formed the two divisions of *four* and *seven* branches respectively. A quarrel soon ensued between them, and the feud was bequeathed to their posterity. It is certain that from time immemorial the greatest enmity has existed between the Haft Langs and Chahár Langs; and although both known as Bakhtiyáris, these tribes seldom intermarry. Their garmesírs,|| or places of winter residence, are now chiefly divided by the Kárún; their sardesírs, or summer quarters, are not so well distinguished, but the tribes of the Haft Lang very rarely encamp near those of the Chahár. Should they approach, much bloodshed is usually the consequence.

The Dinarúni tribes came originally from Isfahán. Their encampments are limited to the valley of Súsan and Bors, and to the mountains in the immediate neighbourhood. It is only since their alliance with Mohammed Takí Khán that they have been allowed to settle in the extensive and fertile plain of Mál-Amír.

The tribes of Jánnikí Garmesír and Jánnikí Sardesir were originally included in the Kúbgelú. The Gúndúzlu¶ is an Afshár tribe. I have not been able to ascertain the precise period

* Mutí' ?—F. S.

† Seven legs or branches.—F. S.

‡ Syria.—F. S.

‡ Four legs or branches.—F. S.

|| Garmesír and Sardesir, i.e. warm and cold tract in Persian, is the Yáílá and Kishlá of the Turks, who also say Yáílák and Kishlák.—F. S.

¶ Gúndúz-lú signifies 'day-timers' in Turkish. Many of these tribes, as well as their neighbours the Kurds, speak Turkish, and are probably of Turkish origin.—F. S.

of their immigration into this country. Nádír Sháh found them in Khúzistán, and compelled them to return with him into the north of Persia. After his death, the Gúnduzlús alone, of the numerous Afshár tribes that had quitted Khúzistán, returned to their former pastures. The Afshárs occupied the greater part of the province to the foot of the great chain of mountains, and even the country now inhabited by the Cha'b Arabs, where Dórák* was their principal settlement. The Bakhtiyáris were confined to the mountains; and the Afshárs were generally sufficiently powerful and united to oppose them with success if they ventured into the plain.

The Bakhtiyáris are at present under the governor of Isfahán, the Mo'tamid ed Daulet; with the exception of the tribes of Sallák, Memíwand, and Zálakí, and a small part of the tribe of Móguwí, which, being in the vicinity, are under the immediate control of the governor of Burújird.

Mohammed Takí Khán, the great Bakhtiyári chief, now in confinement at Teherán, is descended from an ancient and noble family, in whom for centuries has been vested the chieftainship of the Chabár Lang.† In the time of Nádír Sháh, Zamán Khán had three sons by the same wife—viz., 'Alí Mardán, Reshíd, and 'Alí Sáliḥ. Reshíd held a high station in the court of Nádír, and on the Sháh's death, possessing himself of a large sum of money from the treasury, fled to his native mountains. With his pecuniary assistance, his brother 'Alí Mardán appeared as a competitor for the crown of Persia. Mohammed Takí is descended from Reshíd. 'Alí Mardán at his death left an only daughter, from whom is descended the present 'Alí Mardán Khán, who has mixed but little in the affairs and broils of the Bakhtiyári tribes, and has now no authority among them. These chiefs were all Kiyúnurzís. 'Alí, the father of Mohammed Takí Khán, had so much power over the tribes that the suspicions of the Persian government were excited. His brother Hasan, and Fet-h 'Alí, his uncle, betrayed him into the hands of the Sháh. His eyes were put out, and Hasan received the chieftainship as the reward of his perfidy. Mohammed Takí and his brothers were then children, and resided among the inhabitants of the Armenian villages in Ferídún,‡ by whom they were entirely supported. Hasan, to strengthen his authority, had put to death Iskander, the uncle of Mohammed Takí, with two of his nearest relations,

* Properly Daurák, the diphthong au being often changed into ó, thus: yaum, 'a day,' in Arabic, is commonly pronounced yóm, as in Hebrew.—F. S.

† Ministers of the empire.—F. S.

‡ Many of the villages of Ferídún, including Sangi Bahrám and Sberiskán, were purchased by Mohammed Takí's father from the Government, and were consequently his own property. 'Alí died four years ago.

and had attempted to murder his brother and his two sons. Thus, according to the laws, the blood of three persons was required by Mohammed Takí. His youth and poverty allayed the suspicions of Hasan, and he was suffered to live unmolested in the Armenian village of Sangi Bahrá. At the age of eighteen he formed the design of avenging the murder of his relations and the injuries inflicted on his father. He was joined by his two younger brothers, 'Alí Naghí and Khán Bá. The three youths, having penetrated without discovery to the dwelling of Hasan, slew him as he rose from his prayers. They were immediately joined by a few of the tribes, who regarded them as their legitimate chiefs, and with whose assistance they succeeded in putting to death Fet-h 'Alí and the eldest son of Hasan: thus taking revenge for the blood of their relations, according to the barbarous laws of the country. He subsequently married the daughter of Hasan, and brought up the three infant children of that chief. Since that time Mohammed Takí has enjoyed the chief power among the Bakhtiyá.

During the period of Mohammed Takí's prosperity the following tribes acknowledged his authority:—Jánnikí Garmesír, Jannikí Sardesír, Kiyúnurzí, Suhúní, part of Móguwí, Gúndúzlú, Dínárúní, the tribes occupying the plains of Rám-Hormuz, the inhabitants of the village of Ferídún, and a small portion of the Haft Lang tribes of Dórakí and Beídáwand. The Bahmehís and Teíbís, the largest of the Kúhgelú tribes, whose chiefs are married to the sisters of Mohammed Takí, were more under his control than under that of the governor of Behbehán, and joined him in his wars, when not prevented by circumstances from doing so. The numerical strength of these tribes may thus be estimated:—

	Men.
Jánnikí Garmesír	4,000
Jánnikí Sardesír	2,500
Kiyúnurzí	800
Suhúní	1,000
Bíndúní and other small tribes	500
Móguwí	400
Gúndúzlú	1,500
Dínárúní	3,000
Tribes of Rám-Hormuz	1,500
Bahmehí	2,000
Feilí	1,500

Total 18,700 men.

Of this number between five and six thousand are horsemen, and the whole well armed with muskets and matchlocks. Mohammed

Takí Khán, however, could only under the most favourable circumstances raise so large a body of men. I believe that he never assembled more than 13,000, of whom 3000 were horsemen. The tribes of Jánneki Sardesír were seldom inclined or able, from their own intestine broils, to join him; the Dínárúnís were sometimes not altogether under his authority. The villagers of Feridún are unable to leave their lands to assemble in the Garmesír, and the Bahmehís and Teíbís, being tribes of Kúhgelú, were too frequently engaged in their own wars to quit their mountains. Mohammed Takí could perhaps, if engaged in wars with other tribes, or with Shúshter, or Behbehán, or the Cha'b Arabs, have raised 15,000; but if opposed to the government, he could scarcely have collected more than two-thirds of that number, except in a moment of popular excitement, for reasons which I shall hereafter mention. In calculating the actual force of an I'liyát tribe, like the Bakhtiyáris, it may be presumed that each family can produce at least one armed man, and indeed each family may be called upon by the chief for the services of one person in his wars; but it must be remembered that, both for the internal defence of the country, and for the actual cultivation of the soil and other necessary labours, a large portion of the male population will be unable to leave the tents. In the event of an external war, three-fourths of the males between the age of sixteen and sixty, would probably join the Chief.

Mohammed Takí Khán relied chiefly on the tribes of Jánnikí Garmesír, and the Head of this dependency is usually considered the great Chief of the Chahár Lang. Of them he was the acknowledged legitimate chief. Each division has its Kadkhudá,* or Rísh Safid,† a kind of petty chief, who has little authority except within his own encampment. Of the tribes of the Jánnikí Garmesír, the Mombení and the Makiyáwand are the most powerful, the former having between eight and nine hundred excellent matchlock-men, the latter between five and six hundred equally good horsemen. The Jánnikí Garmesír matchlock-men are considered as the best among the Bakhtiyáris, and they are celebrated for personal courage. These tribes are chiefly Deh Nishíns, and very seldom visit the Sardesírs during the summer and autumn, being employed in their rice-fields. Their villages and

* Pronounced kyet-khudá and kyahyá by the Turks.—F. S.

† Literally *white beard*; the usual title of this petty chief is either *Mullá Kalanter*, or *Khájah*.* The word *Tashmál* is not known among the Bakhtiyáris, but is confined entirely, I believe, to the Feílís.

* *Kalander*, or *Kalender* and *Khójah* (i. e., *Khwájah*), are properly titles belonging to members of religious orders.—F. S.

encampments are chiefly in the plains of Bághi-Malik,* in the valleys of Meï-Dáwud and Mál Aghá, and among the neighbouring low hills. The tribe of Mombení occupies the valley of Meï-Dáwud, the tribe of Zangenah the plain of Bághi-Malik, and the Makíyáwand the country near Taulah and Gulgir. The tribes of Jánnikí Garmesír are the most peaceable of the Bakhtiyáris, seldom engaged in war, and neither given to plunder nor robbery.

The tribes of the Jánnikí Sardesír are for the most part Deh Nishins, and their Chief resides in the village of Lurdágán. Mohammed Takí could enforce his authority over them, but they would seldom accompany him in his expeditions, except against a common enemy. When I visited Lurdágán, their Chief was 'Alí Gedor Khán. The Persian government suspecting him to be too much under the power of Mohammed Takí, instigated his nephew, Rustam, to eject him, which he effected by murdering his uncle in the night. The Mo'tamid, pleased by this ready compliance with his wishes, recognised Rustam as the chief of Jánnikí Sardesír, and supported him with his authority. These tribes are neither celebrated for courage nor skill as matchlock-men; they have between five and six hundred good horsemen. The valleys of the Jánnikí Sardesír are, on the whole, not ill cultivated. Rice, corn, and barley are raised in abundance; gardens and vineyards, producing good fruit, surround their villages, and the hills are thickly wooded with the bellút,† or dwarf oak, and other trees.

The Kiyúnurzís, of which tribe was the great Bakhtiyári Chief, have been much weakened by long-continued intestine wars. Most of their chiefs have fallen victims to their domestic quarrels, or to the vengeance of Mohammed Takí Khán. They are brave and expert horsemen. This Chief had succeeded in breaking them of their predatory habits, and for some time they lived peaceably in Kal'ah Tul or its neighbourhood, and formed the immediate personal attendants of Mohammed Takí, always anxious for an outbreak, to indulge in their old propensities of war and plunder. They are chiefly I'liyát.

The Suhúní is a large tribe of I'liyát; the chief, Shefi' Khán, is a liberal and able man, and was the wazír of Mohammed Takí. Having been long accustomed to collect the annual tribute of the tribes, and to devote his attention to their internal polity, he was better acquainted with the state and history of the Bakhtiyáris than any other man I met with in the country. Although the Chief of the tribe, he is not a member of it, but of an Afshár family long settled in the mountains. He was for some

* King's garden.

† Bellút, or Ballút, in Arabic, signifies an acorn, and is used for every kind of oak; whence *Bellota*, an acorn, in Spanish, and the *Quercus Ballota* of the botanists.—F. S.

years in Teherán, and served as major in the Bakhtiyári regiment disciplined by Major Hart. The Garmesírs of the Suhúní were originally in Andakau and Shimbár to the north of the Kárún, but being strongly attached to Moḥammed Taḳí, they crossed the river and settled in Gulgir and A'smári. This tribe has both good horse and matchlock men. They cultivate corn and barley, to the growth of which the land they occupy is particularly favourable. Since the fall of Moḥammed Taḳí, the Suhúní have recrossed the Kárún, and placed themselves under Moḥammed Metí and Ja'fer Kulí Sheff, their chief, is now a fugitive in the mountains.

The Móguwí was formerly a very large tribe, and its late Chief, known as the Khájah, had much power among the Bakhtiyáris. He murdered his own brother and his two uncles, who were related by blood to the great Chief. These murders did not remain unavenged. Moḥammed Taḳí marched against him, destroyed his castle in Ferídún, and carried away his wife and children and the greater part of his tribe. The remainder took refuge among the Bakhtiyáris, within the government of Burújird. Khájah 'Abbás Khán fled to Isfahán, and under the protection of the governor, escaped the punishment he so justly merited. The Mo'tamid now finds him of service in intriguing with the chiefs, and fomenting dissensions among the tribes. The Sardesírs of the Móguwí were originally in Feridún, their Garmesírs in Andakau, where the Khájah built two mud forts now in ruins. The Móguwí, with the Maḥmúd Sáleh, is one of the original tribes of Chahár Lang.

The Gúndúzlú is, as I before observed, an Afshár tribe; many Arab families have also joined it, and while the Turkish language is still understood by them, both Arabic and Persian are generally spoken. The chief usually resides in the village of Boleítí,* adjoining the town of Shúshter, to which place the tribe generally repair during the winter months; in the summer and autumn, they encamp on the Ābi Gargar from Shúshter to the junction of that canal with the main body of the river Kárún at Bandí-Kír. Moḥammed Taḳí had much improved this tribe, and distributed Arab mares and stallions among the chiefs to improve the breed of their horses. The experiment was attended with success, and he soon formed a body of nearly six hundred horsemen, brave and well appointed, which proved of much service to him in his wars. They were particularly useful in rencounters with the Arabs, whose mode of attack they well understood, and whom, by their superior gallantry, they were generally able, although greatly inferior in numbers, to repel. Their chief, Murád Khán,

* Or Boláiyítí.

is a liberal man, and was one of the steadiest supporters of Mohammed Takí.

The Dínárúní tribes, placed between the Haft Lang and Chahár Lang, generally joined the strongest party. They had latterly adhered to Mohammed Takí, who, in return for their services, allowed them to cultivate the rich plain of Mál Amír. The largest tribe is the Āli Moḥammedí,* whose chief, Mullá Moḥammed, was killed in 1841. He was succeeded by his brother Mullá Cherágh. The Dínárúnís are most notorious thieves, and even Moḥammed Takí Khán was unable to check their propensity for plunder. They are as barbarous and as ignorant as any tribes in the mountains, and it is only through fear of the punishment, which the Bakhtiyári chief has more than once inflicted on the heads of their tribes, that they are kept in subjection. They muster a few good horsemen, and are admirable matchlockmen. They cultivate corn, barley, and rice, and possess large flocks of sheep and goats.

Rám-Hormuz was formerly included in the government of Fárs, and was under the immediate control of the chiefs of Behbehán. Its plain was, a few years ago, ceded to Mohammed Takí by Mirzá Mansúr Khán, the popular chief of Behbehán, and brother of the present Mirzá Koma,† in return for assistance afforded him by the Bakhtiyári Chief in expelling from the town a Persian army sent against him by the governor of Shíráz. The plain of Rám-Hormuz is inhabited by the following tribes, who are partly I'liyát and partly Deh-Nishíns:—Ali Khamís, Āli Bú-Kurd, Shúlí, Ali Bú-Murád, and Gúrgi. The Arab chief of Rám-Hormuz, Sheikh Moslet, was put to death a few years ago by Mohammed Takí, who had detected a correspondence between the Sheikh and Sultán Murád Mírzá, inviting the prince into the country, and offering to seize the Bakhtiyári Chief. On the death of Sheikh Moslet, the greater part of the Arab tribe of Āli Khamís left Rám-Hormuz, and settled on the northern bank of the Kárún, between that river and Hawízab. They have since returned to the plain. This tribe is entirely composed of I'liyáts. The other tribes mentioned live in villages. Mohammed Takí Khán endeavoured to settle several of his tribes in this singularly fertile plain. Strenuous and repeated opposition from the Persian government, however, frustrated his endeavours, which otherwise would have been crowned with success. He built several villages, and the plain by degrees assumed a flourishing appearance. The southern part of the

* Āli in Arabic signifies family, and is synonymous with Bení (children). It has sometimes been mistaken by our Anglo-Indians for the article Al, which can never be prefixed to a proper name.—F. S.

† This, however spelt, is a very uncommon Persian name.—F. S.

district of Rám-Hormuz was, however, constantly exposed to the plundering incursions of the Kúhgelú. The Ali Khamís, also, whenever an opportunity occurred of falling upon the villages with impunity, revenged the death of their Sheikh by burning or carrying off the property of the inhabitants. The tribe of Ali Bú-Kurd, having good matchlock-men and a few expert horsemen, always repulsed the Arabs. The Kúhgelú destroyed a few villages, but Moḥammed Takí soon compelled them to give satisfaction. The principal villages in the plains of Rám-Hormuz are the village of that name, containing about two hundred and fifty families, situated to the right of the river; Deh Yúr,* a small mud fort, the residence of 'Abdallah Khán, the chief of the tribe Ali Bú-Kurd; Kal'ah Sheikh, a fortified mud village on the banks of the Kurdistán, which has been several times defended with success against the Arabs and the more formidable attacks of Persian troops and artillery; Sultán-ábád, Jáízán, 'Alí-ábád, Kherfend, Jáízán, and Cháh-Mullá.† a mud fort on the Kurdistán. The annual tribute claimed by the government for Rám-Hormuz was, until lately, 3000 tóman, but, finding that Moḥammed Takí was improving the country, they suddenly raised it to 5000, a sufficient check on his endeavours to colonize the plain. Rám-Hormuz could scarcely furnish this yearly sum without ruining its villages. Since the capture of that patriotic chief, the Ali Khamís have returned to the plain under the present Sheikh Sultán.

The villages of Ferídún are partly inhabited by Armenians; some were purchased by Moḥammed Takí's father, and others were acquired by him. In Ferídún this great Bakhtiyári Chief also endeavoured to encourage agriculture, and to settle his wandering tribes. His endeavours were of course opposed by the government, and many villages were actually plundered at its instigation. Both the Armenian and Muselmán inhabitants are quiet and inoffensive, having nevertheless a fair reputation for courage, and being always successful in repelling the attacks made upon them by the Bakhtiyári I'liyáts. Many of the inhabitants of Ferídún, with a large body of men from Gilpáigán, have been formed into a regiment. The chief of Ferídún was Aghá Faraj, nephew of Moḥammed Takí Khán.‡ The Bah-mehís and Feilís will be hereafter mentioned with the other Kúhgelú tribes.

I have described the state of these tribes when Moḥammed Takí Khán was the chief. Before I quitted Khúzistán many

* That is, Dihí Yár, Friend's Ville: *i* has commonly the sound of *e*, and *á* of *ú*. —F. S.

† Doctor's well. —F. S.

‡ This chief has since been cruelly murdered, probably at the instigation of the Mo'tamid.

changes had taken place; whether permanent or not, future events must show: but I am inclined to think that Moḥammed Taḳí, or some member of his family, will eventually succeed in establishing himself in the country. The Mo'tamid has now placed 'Alí Rizá, son of Hasan, in the chieftainship of the Kiyúrnuzí and Jánnikí Garmesírs. Sheikh Sultán has recovered the plain of Rám-Hormuz, and is to account directly with the government for the annual revenue. The Gúndúzlu tribe is to be rated with Shúshter, and considered as one of its dependencies. The Jánnikí Sardesír remains under Rustam. The Suhúnís were made over to Ja'fer Kulí, who treacherously seized their two chiefs, Bába and Abúlfedá, brothers of Shefi, and placed them in the hands of the Mo'tamid, by whom they were loaded with chains. Moḥammed Metf' Khán, however, now commands the tribe. The Dínárúnís have been entirely plundered, and their Chief killed by Kelb 'Alí Khán, also at the instigation of the Mo'tamid. The villages of Ferídún were considered as forfeited to the government.

The Persian government had two motives for seeking the overthrow of Moḥammed Taḳí Khán, or rather, one of the motives alleged was, in fact, but an excuse; namely, an exaggerated account which the Sháh had received of his wealth, and of a correspondence which, it was pretended, he had carried on with the banished princes. His wealth, like that of other chiefs of these nomade tribes, consisted principally in flocks and herds; actual specie they very seldom possess, and the enormous sum that the Mo'tamid had represented to be in Moḥammed Taḳí's possession was such a ridiculous exaggeration as a Persian alone could credit. Moḥammed Taḳí's actual property might have consisted of 1500 buffaloes, 50 excellent Arab mares, some of which were valued at very high prices, and could have been sold for 500 tó máns (250*l.*) in Khúzistán; the same number of good Cha'b stallions, 500 brood-mares, and 500 horses of Lur and mixed breeds, and about 10,000 sheep and goats. This I consider as having been about the whole amount of his property. Moḥammed Taḳí, being a despotic chief, had of course a certain power over the property of those who lived under his authority.

Since the fall of that great Bakhtiyárí chief, Ja'fer Kulí Khán of the Haft Lang tribe of Baidárwand or Bakhtiyárwand, has enjoyed the chief authority and power among these mountain-tribes. Of all the Bakhtiyárí chiefs he is the most daring and unprincipled. The large tribe of Baidárwand, with the Rakí, a subdivision of the Dúrakí, acknowledge him as their chief, and all those among the Bakhtiyáris, who seek for plunder and adventure, have placed themselves under his protection. He has thus

frequently been able to assemble 5000 well-armed and desperate men. But his fortunes have been various, and he has more than once been compelled to seek for safety among the Arab tribes of the plains, or in his celebrated hill-fort or Diz. This remarkable stronghold is about 2 days' journey, or 16 farsakhs,* to the N.E. of Shúshter. Diz is the name generally given to a hill-fort or natural stronghold not requiring artificial defences. The mountains of the Bakhtiyáris have several places of this nature; but the most celebrated is that in the possession of Ja'fer Kulf. This Diz is now generally known by the name of Diz Asad Khán, from the father of its present owner, a celebrated chief who generally occupied this strong-hold. Its ancient name was Diz Malákán, the plural of Malák, *i. e.* angel; the Bakhtiyáris pretending that it was delivered by angels into their hands, as no mortal could have mounted up it without supernatural assistance. It has been for eight generations in the possession of the family of Ja'fer Kulf Khán. It originally belonged to the tribe of Móguwí, a chief of whom having captured a chief of the Baídárwand, confined him in the Diz. The prisoner, with the assistance of his wife and several attendants who were permitted to accompany him, succeeded in driving out the owners, and in taking possession of it himself. It has since remained in the hands of his family. In the centre of a vast basin, formed by lofty surrounding hills, rises a mass of rock about 3 miles in circumference, the perpendicular sides of which overtop the neighbouring mountains. From the bottom of these cliffs the detritus slopes rapidly to a considerable distance, and even the cliffs themselves cannot be approached if this slope be in any way defended. The cliffs are naturally inaccessible. The rock is a conglomerate, in which a limestone, abounding with small fossil shells and ammonites, is chiefly conspicuous. The summit has only one accessible point, and that can be defended without difficulty even by one person when the approaches are not destroyed. The ascent is made by a very long ladder and small steps or rather holes cut in the rock. When this ladder is removed, all communication with the summit is cut off. The Diz is divided into the upper and lower. The ascent from the lower to the upper, is equally precipitous and difficult. The lower Diz consists of a small platform, on which there are three springs of water and a few huts. This is the usual residence of the chief. The upper Diz is without water, except that which may be collected in reservoirs during the winter-rains. It contains a few acres of good arable land, which are frequently under cultivation. Two hundred Sháhímans† of seed may

* About sixty miles.

† The Man Sháhí is equal to rather more than two Mans Tabrizí, or about 15lbs. avoirdupois.

be raised without artificial irrigation. Sheep and goats have been conveyed to the summit, and beasts for the plough, when needed, are raised by ropes. It is not extraordinary that a natural fort of such strength should have defied the regular and irregular troops of Persia for centuries. There is little doubt but that the summit might be reached by shells, and the crops easily destroyed. The approach, however, to the Diz from every quarter is exceedingly difficult, and the mountain-passes might, if defended with skill and courage, be held against any number of men. Ja'fer Kúlí Khán and two or three servants on whom he can rely, are its only inhabitants, and even the brother of the chief does not sufficiently enjoy his confidence to be permitted to ascend it. In time of siege, the I'liyáts collect round the base, and form breastworks on the detritus, the chief alone holding the Diz. There are many ruins and excavations on the summit, which are evidently of the Sasanian period. It is probable that such a strong-hold as this must have been used as a place of refuge and defence for centuries. The springs in it are not abundant, and are probably incapable of supplying any large body of men. Wheat and other necessaries are always kept in store, and several flocks find pasture on the summit; so precipitous are the cliffs that even the mountain-goats cannot descend them, and many have been domesticated on the Diz. Ja'fer Kúlí, with this strong-hold in his possession, has been able to defy the Persian government and the most powerful mountain-chiefs for many years.

He has raised himself to his present powerful position by a series of murders and acts of treachery of the most atrocious character. The slaughter of fourteen of his relations, including his own brother, was necessary to the full establishment of his authority, and he did not hesitate to accomplish it. Such a man can consider no oath or obligation binding. His very name is a terror to the inhabitants of the provinces to the west and east of his mountains. Accompanied by his notorious chiefs and relations A'á* (Aghá) Khosrau and A'á Parváz, he has frequently carried his plundering expeditions to the neighbourhood of Kirmán, Yezd, Shíráz, and even Teherán. These attacks were made with the most determined bravery. No number of Persians was able to withstand them, and the name of a Bakhtiyári was sufficient to put to flight the boldest of the peasantry. The communication between the N. and S. of Persia was frequently interrupted, and caravans almost daily plundered. Ja'fer Kúlí Khán has little to depend upon beyond his reputation for courage and enterprise; his followers only adhere to him while he is able to

* The guttural gh is often lost in the throat: thus *oghú* and *oghán* are commonly pronounced *ólú* and *ólán*; and in the Jaghatái or Eastern Turkish, we have *óligh* for *ólú*, *ghah* for *ah*, &c., in the 'Osmánlic dialect current at Constantinople.—F. S.

lead them to plunder. His Bakhtiyáris may be considered as the bravest, and at the same time the most barbarous of all the Persian tribes. It cannot be expected that such men have much leisure or inclination for agriculture; they scarcely raise sufficient corn for their own wants, and are frequently exposed to much misery from absolute famine. The tribe of Bakhtiyárwand, or, as it is now generally called by the Lurs, Baïdárwand, is one of the original tribes of Haft Lang, as well as that of Dúrakí. Several of the subdivisions of the Dúrakís, such as Rakí, Mári and Kandálí, also acknowledge the authority of Ja'fer Kulí. They encamp during the winter near the Diz, in Shimbár and Andakau, among the hills of Láli, and sometimes as far as Gotwand on the Kárún. Their Yáíláks, or summer-quarters, are in the plains of Bázuft and Chahár Maháll and the neighbouring mountains. Ja'fer Kulí has built a small mud fort in Jallakán, a village on the Kárún, within 3 farsakhs of Shúshter, and claims a portion of the produce of the lands, to which, I believe, he has no legal right.

I am well acquainted with this chief; and have received much civility and attention from him, having resided for several days on the summit of his Diz. The government has now given him its support, and if he can forget his old habits of war and rapine, he will probably hold a very powerful position in this part of Persia. He is able at present to raise about 700 horsemen, and between 3000 and 4000 matchlock-men.

Next in political importance, among the Bakhtiyári chiefs, to Mohammed Takí, is Kelb 'Alí Khán of the Haft Lang tribe of Dúrakí. He is considered by the tribes, as the legitimate chief of the Haft Lang, and is, like his rival, descended from an ancient and noble family. Mohammed Takí and Ja'fer Kulí, with whom he was continually at war, have much reduced his power, and he can scarcely at present muster more than 3000 men. Indeed he almost owes his existence to a remarkable Diz, called Diz Sháhí,* which like that of Ja'fer Kulí, is deemed by the mountaineers impregnable. Thither he has frequently retreated after the total overthrow of his tribes. This stronghold is a plain about 15 miles in circumference, forming the summit of a lofty hill, the sides of which are almost perpendicular, and only to be ascended by steep and difficult pathways which may easily be defended, or perhaps totally destroyed. As water is abundant there, and flocks have been conveyed to the summit of the Diz, villages have been built on this table-land, and form the ordinary place of residence for the Dúrakí tribe. The soil is rich and under cultivation, producing grain of various kinds;

* Royal castle.

there is, therefore, little chance of such a place's suffering from a siege by Persian troops, though it would probably be unable to withstand the attack of an European force.

The followers of Kelb 'Alí are brave and warlike, constantly engaged in war and plunder. In this, however, they are not encouraged by their chief, though he has not sufficient influence over these hardy mountaineers to prevent their following what they consider as their lawful pursuits. The Haft Lang have a reputation for cruelty, which does not extend to the Chahár: they have frequently been known, after plundering their enemies, to cut off the breasts of the women, and even to proceed to acts of more gross and revolting barbarity. Such cruelties are looked upon with horror by the Chahár Lang, who have, I believe, always respected women, even in moments of strongest excitement. Wars between Bakhtiyáris, unlike those between Arabs, are always wars of extermination, quarter being seldom received or offered.

Diz Sháhi is situated near the river of Dizfúl, about a day's journey to the N.E. of the town. In its vicinity, the tribes under Kelb 'Alí Khán usually encamp during the winter months; in the spring and summer they ascend to the Yáiláks of Chahár, Maháll, and Bázuft. Besides the large tribe of Dúrakí, Kelb 'Alí commands a few subdivisions of the Dínárúnis, several villages both in the Garmesírs and Sardesírs, and two or three small semi-Arab tribes of buffalo herdsmen. He exercises no influence whatsoever in Shúshter or Dizfúl.

He is one of the most peaceable and trustworthy of the Bakhtiyári chiefs, and little calculated to restrain the violent passions of the wild men he has to command. Although the Haft Lang acknowledge his authority as their chief, they generally contrive to set it at defiance, and indulge without restraint in expeditions of plunder and rapine. The chief seeks consolation in the Korán, and in the punctual fulfilment of his religious duties—a strange anomaly in the head of so wild a people. Kelb 'Alí, however, bears a high character for probity, and I have heard many anecdotes of his generosity and good faith which do him much credit. He is no way deficient in courage, but, on the contrary, the most daring and skilful horseman in the mountains. His relations are always ready to head the tribes in plundering expeditions, and he has had much difficulty in keeping on good terms with the Persian Government on that account. He has been ill-treated, as a matter of course, and undeservedly so, by the Persians. Although never able to raise the annual tribute, and always in arrears in his accounts with the Government, yet, on the whole, he has given them little trouble, and has been considered as too insignificant to excite suspicion.

Mohammed Metí,* Khán of the Chahár Lang tribe of Maḥmúd Šáleh, is related to Moḥammed Taḳí, and his tribe was formerly under the immediate authority of that chief. His brother having been put to death by a chief of the Suhúni, who was protected by Moḥammed Taḳí, he withdrew and settled in the Sardesírs. He has under his command about 300 horsemen, and 500 matchlock-men. Since his separation from Moḥammed Taḳí Khán, his tribe has chiefly been engaged in plunder; and his own brother was taken prisoner after robbing a large caravan in the immediate neighbourhood of Isfahán.

He possesses a hill-fort or Diz, called Mendezún, situated in the hills, overlooking the plain between Shúshter and Dizfúl. It is a place of some strength in the Bakhtiyári wars, but is in every respect far inferior to the Diz-Asad-Khán, or Diz Sháhi.

Moḥammed Metí has at present very little influence among the tribes, and is neither a man of character nor ambitious.

The U'lakis and Mál Ahmedís were originally subdivisions of the Baídárwands. They have, however, long separated from them; and as their Sardesírs and Garmesírs are perfectly distinct, they may now be considered as separate tribes. They accompanied Nádir Sháh in his expedition against Herát, and afterwards settled for a short period in Kandahár. Wishing to return to their native mountains, they crossed Sistán to Kirmán, and from thence proceeded to Shíráz, where they were plundered by the governor. They subsequently, according to their own account, purchased the Kal'ah Saíf,† and revenged themselves on the governor of Fárs by ravaging his country. Having received information of the fertility of the district of Felát, then occupied by the tribe of Zangenah, which is a division of the Jánnikí Sardesír, they proceeded thither, and the chief of the Mál Ahmedís received the daughter of the chief of the Zangenahs in marriage. A few years having elapsed, and the Mál Ahmedís having established themselves in the country, they succeeded in ejecting its original owners, and have ever since resided there. The greater part of the tribe of U'lakí has proceeded from Shíráz to Teherán, where they have since remained. About 200 families intermarry with the Mál Ahmedís.

The country occupied by the Mál Ahmedís being within the province of Fárs, they have to pay a tribute for its occupation to the governor; but the tribe itself being included within the divisions of the Bakhtiyáris, they have also to pay the capitation-tax. The former amounts to 400 tó máns, the latter to 300. The tribe of Mál Ahmedí may at present consist of about 1000 families. Its chief is Háúm Khán, with whom I was well acquainted. I

* Probably Maṭí'.

† White Castle.

found him an amiable and well-informed man. These tribes have now been made over to Ja'fer Kulí, but they are at too great a distance from the country of that chief to be immediately under his authority. They are poor, and cannot bear a considerable taxation.

The Memíwand and Sallák are very large tribes, chiefly engaged in the cultivation of the soil. They do not descend into the Garmesírs, except the 'I'sawand, a subdivision of the Memíwand, who, under 'Abbás Khán, encamp near Dizfúl during the winter months.

There exists a marked difference between the tribes of Haft Lang and those under Mohammed Takí Khán. The former are solely engaged in plunder; while among the latter, robbery on the high road seldom occurs. The first are entirely I'liyát; the second were already applying themselves to agriculture, and were settling to a certain extent, in villages. Through the country of the one, a caravan or traveller could scarcely venture; through the country of the other, to use their own expression, "a man might walk with a thousand tó máns on his head." The contrast in their appearance is equally striking. The Haft Lang are ill clothed, their encampments poor, their flocks few, and their men but ill armed and ill mounted. The Chahár Lang are generally neat in their dress, their encampments extensive, and surrounded by large flocks of sheep; almost every chief of a family is possessed of a good mare, frequently of Arab blood, and the horsemen are supplied with excellent weapons. This contrast in character and appearance is even remarked by Persians. This alone would prove the benefit conferred by Mohammed Takí Khán on this country.

The tribes of Kúhgelú adjoin the Bakhtiýáris, and occupy the mountains to the south of the valley of Meí Dáwud as far as Báshít, a village on the road between Behbehán and Shíráz. These tribes have, I believe, escaped the notice of travellers, and the mountains they inhabit are confounded in maps with those of the Bakhtiýáris. The Kúhgelú, however, consider themselves as distinct from that tribe, and have always lived under different chiefs and under a different government, that of Shíráz. Their dialect, nevertheless, differs little from that of the Bakhtiýáris; and their manners, customs, character and religion, are the same.

The Kúhgelú are divided into the following tribes:—

Large Tribes.

Chahárbánichah, divided into . . .	$\left\{ \begin{array}{l} \text{Bóher Ahmed,} \\ \text{Nuwi,} \\ \text{Dushmanziyóri,} \\ \text{Cherúmi.} \end{array} \right.$
Teíbí.	

Bahmehí, divided into	{ Ahmedi, Mohammedí, Kálakal.
Báwí, Yúsofi, Agájjerí,	| Kúhmarrah, Shír 'Alí, Shahrúwí.

Small Tribes.

Tekájjerí, Geghatine,* Magdelí,	Telah-kurí,† Júmáh-bozurgí, Afshár.
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The Kúbgelú are under the governor of Behbehán, and chiefly inhabit the western part of the great chain of hills; their Garmesírs and Sardesírs are little more than a transition from the foot to the summit of the mountains.

The popular governor of Behbehán, Mírzá Koma,† is a Sayyid, or descendant of the Prophet, and the chieftainship of the Kúbgelús has been long in his family; but of the large tribes, the Bahmehís, Nuwís, Feilís and Dushmanziyóris, have alone been his firm supporters. The Bóher Ahmedís have generally been in open opposition to him. In the town of Behbehán, there are also two tribes or parties, the Behbehánís and the Kanawátís. The former are supporters of the Mírzá, and the latter have generally intrigued against him.

Behbehán was formerly a city of some importance. It was almost depopulated by the plague; and the Persian Government has on several occasions ruined the greater part of its inhabitants. It is situated in a very fertile and extensive plain, watered at its northern extremity by the river Kurdistán, about 2 farsahks, or 7 miles from the mountains, and about 5 from the Zeitún§ Hills. The plain is between 6 and 7 farsahks || in length. The town may be about 3½ miles in circumference, surrounded by a mud wall with circular towers and bastions at regular distances. Its S.E. corner is occupied by the castle, called Kal'ah ¶ Náranj, a place of no great strength, with thick and lofty mud walls, surrounded by a deep ditch. Its interior is small and confined, and not capable of containing any number of troops. It was defended by five or six rusty cannons, and might successfully resist an attack of Persian troops. The town of Behbehán itself is almost a heap of ruins, and even at present scarcely contains 4000 inhabitants. Its bázár is small, and commerce is almost neglected. It has few good houses; the

* Jaghatái?

† Tekah Kúrí in the MSS. list of names.—F. S.
‡ Called Kúms (i. e., Kúms) by the Baron de Bode, Jour. Geogr. Soc., xiii. 87.

§ Olive-tree.

|| From 20 to 24 miles.

¶ Orange Castle.

streets are chiefly formed by wretched mud hovels, which are now in a lamentable state of dilapidation.

The Bamehí is the largest and most important of the Kúhgelú tribes. It contains about 3000 families, who occupy the mountains adjoining the Jánnikí Garmesír and the Jánnikí Sardesír. The residence of the chief, Khálíl Khán, is the Kal'ah 'A'la,* a small mud fort near the source of one of the branches of the Jer-ráhi.† This tribe has about 2000 excellent matchlock-men, and a small but very efficient body of horsemen. The Bahmeheís are entirely occupied in plundering their neighbours; they are, Chiefs and all, the most notorious robbers, and as ignorant and barbarous as any tribe in the mountains. Their Head is a man of the vilest character. The shedding of blood is carried to a lamentable extent—the life of a man is no more valued than that of a sheep. They are treacherous and deceitful; with them no oath nor obligation is binding. I have been among this tribe, and knew their Chief;‡ but I believe that no traveller, unless protected in the strongest way, could venture to remain among them.

The Feílís may probably muster about 2000 families, and are next in importance to the Bahmeheís. Mohammed 'Alí Khán, their chief, was killed when bravely supporting the cause of Mírzá Koma against the government; since his death the tribe has been in much disorder; indeed all the Kúhgelú tribes during the year 1841 were in the most disturbed state.

Included in the districts of Behbehán are the two districts of Lehruwí and Zeítún; the former extending along the coast of the Persian Gulf from Hindiyán to Bender Ríg, the latter inclosed by a range of low hills and watered by the river Zohreh: both contain numerous villages, but were nearly depopulated by the plague and cholera, especially Zeítún. The principal villages in Lehruwí are, Bender, Dílam, Genáwah, and Bender Ríg on the coast: and inland, Búherát, Láileteín, Hísár, Cháhtar, Gúhabdár, Gazelúrí, Konár-kú, Bonei-kátír, &c. &c. This district is well suited to the cultivation of corn and grain of various kinds, but ill irrigated. The plain of Zeítún, separated from Lehruwí by a range of low sand-hills, is admirably irrigated by the river

* Upper Castle. The Baron de Bode has 'Aláí (Jour. of the Geogr. Soc. xiii. 87). Mr. Layard writes *Allah*, God; but such a name would, by a Muselman, be deemed impious.—F. S.

† Surgeon's River, if the name be rightly spelt.—F. S.

‡ During the late commotions in Khúzistán, the wives and families of Mohammed Takí Khán took refuge with this man, who was the brother-in-law of the chief. He stripped them and turned them out of doors. Shortly afterwards his brother-in-law, Kerím Khán, brother to Mohammed Takí Khán, sought his protection, and was delivered by him into the hands of his enemy. He was led to Bághi Malek and directed to prepare for death. The unfortunate youth placed his hands before his eyes and immediately fell, pierced by twelve balls.

Zohreh,* and numerous canals and watercourses derived from it. The land, now chiefly devoted to rice-grounds, yields abundant crops of a superior quality. Date-trees surround Cham, the principal village, and might be cultivated with success in other parts of the plain; the soil is in fact very rich, and would produce cotton, grain of various kinds, fruit-trees, &c. &c. Cham, the Zeitún of the maps, was formerly a large town, but is now a heap of ruins and almost deserted. In the plain there are several other villages. To the S. of Zeitún, in the hills, is the celebrated castle of Gul and Guláb: it is a natural strong-hold, somewhat similar to those in the Bakhtiyári mountains, and chiefly valuable as a place of defence against irregular troops or the Persian Nizám.

That portion of Hindiyán, which is situated on the left bank of the river, belongs to Mírzá Koma; that on the right bank, to the Cha'b Sheikh. I believe large bagalás can anchor within the river, and are there well protected. Hindiyán has at present very little commerce; but might become an important place if the interior were supplied through Mírzá Koma's territories.

According to a calculation I received from Mírzá Koma, the Kúhgelú tribes amount to 20,000 families, but I am inclined to think that he much exaggerated the number, which is probably nearer 15,000. The annual tribute required of the Mírzá for the whole of his possessions, was 16,000 tó máns; of this sum, Lehruwí contributed 2000; half of the 2000 being latterly paid by Bender Dílam alone, so much had even the little intercourse with the English at Khárek contributed to the prosperity of that village. These tribes may probably raise 10,000 well-armed men, but they are rarely all at the command of the Mírzá.

Mírzá Koma has often been attacked by the Persian government; and generally after a short resistance compelled to leave Behbehán, his lands and tribes having been then plundered by the troops. The intruders, however, never remained long; and after raising as much money as they were able, returned to Shiráz. In the spring of 1841, three regiments of regular troops with two guns were sent against him, under Mansúr Khán: the Mírzá deepened the ditch of his castle, and prepared to receive them. His son, a youth of fifteen, was intrusted with its defence, but having been induced to enter the Persian camp on an oath of

* This river, called Táb* in maps, is only known to the natives by the name of Zohreh. At Zeitún it is a broad stream, fordable during the summer and autumn, but frequently not, and seldom during the rainy months.

* The Táb, which runs past Reján, and falls into the Persian Gulf, is the Kurdistán or Jerráhi, called Aberghún (i. e., Ab Erghán, or Reján) in the Baron de Bode's map. Zeitún is placed by the Baron on the Ábi Shírin, or Hindiyán River.—F. S. ('Jihán-numa,' p. 271.)

safe conduct, he was treacherously seized and the castle surrendered: Mírzá Koma had assembled the tribes, and proceeded to meet the enemy in the field, but the fall of Behbehán, the death of Mohammed 'Alí Khán, and the inability of his old ally, Mohammed Takí, to send him assistance, prevented him from making any effective resistance, and after one engagement with the Persians, in which both parties claimed the victory, he left the country and sought protection in Felláhíyeh: his tribes were immediately plundered and the country laid waste. Shortly afterwards, however, a fatal sickness appeared in the Persian camp. Within a few days the General, his two sons and 700 men fell victims to its ravages; the rest retired; and Mírza Koma having returned to his tribes, is now supported by the Persian government.

The manners of Mírzá Koma are engaging, his opinions liberal, and his disposition amiable. In his government he is mild and just, encouraging agriculture and commerce, and endeavouring to check the predatory habits of his tribes: he was till lately opposed to the Persian government, and his territories were about every three years given to plunder. He is a brave man and an expert horseman. His ambition may have led him on one or two occasions to sacrifice his good faith, and to attack unjustifiably neighbouring chiefs, who in time of trouble might have proved valuable allies; but on the whole, I believe Mírzá Koma to be, for a Persian, a very upright governor, and to have been much liked by his tribes. I was well acquainted with him and accompanied him in several of his expeditions. The Kúhgelú tribes and the town of Behbehán are in the province of Fárs and not in that of Khúzistán, as in Arrowsmith's map. Nafas Kuli Mírzá, or the Wálí, a son of the Fernán Fermái* of Fárs, was, during the latter part of the reign of Fet-h 'Alí Sháh, governor of this district.

Adjoining the Kúhgelú to the S. are the tribes of Mamesenní or Mohammed-Huseíní; of them I know little: they claim great antiquity, and, pretending that one of their clans is composed of the lineal descendants of Rustam, assume the name of that hero. Their principal tribes are, I believe, Rustam, Guví, Bakesh, and Dushmanziyórí,† and may have about 3000 families. Their annual tribute claimed by the government of Fárs is 7000 tóman's. The chief, Khán 'Alí Khán, resides in the neighbourhood of Kal'-ah Saffíd. That remarkable stronghold, so celebrated in the early history of Persia, is now in the hands of this tribe: it is a hill-fort with natural defences, and is of the same nature as the Diz I have described in the Bakh-

* Viceroy.

† Mahmoúd Sálíh and 'Alíwánd are also divisions of this tribe.

tiyárf mountains. Several pathways are said to lead to the summit, but they are most precipitous and easily defended: I believe, however, that it would with difficulty withstand a siege by European troops. Its summit, which is well supplied with water, is about 4 miles in circumference; it has ever been deemed, in Persia, an impregnable post. The legitimate Chief of the Mamesenní tribe, Wálí Khán, after a long and determined opposition to the government, in which he displayed much skill and courage, was taken prisoner by the Mo'tamid, who succeeded in bribing many influential members of his tribe. That Chief, who is now dead, and his family were sent to Teherán. It was upon the followers of Wálí Khán that that barbarous eunuch committed those atrocities which rendered his name so notorious in the province of Fárs.*

The Mamesenní are celebrated for their predatory habits. The road between Shíráz and Behbehán is at all times very insecure; and they have frequently interrupted the communication between the former city and Búsheh (Bushire). They have a high reputation for courage, and produce very good horsemen and matchlock-men. I doubt whether their present Chief exercises much authority over his tribes, or can command a large body of men. I am informed that he is little to be trusted; he has been known more than once, to plunder his guests; a crime which, if once committed by an I'liyát, will give him credit for any other.

The two large cities of Shushter and Dizful form the most important portion of the Persian territories to the W. of the mountains; and the revenues derived from them alone, amount to more than the aggregate sum collected from the mountain-tribes and the Arabs. Shushter, however, no longer enjoys the influence that it did even twenty years ago; and the name alone remains of that city which held so conspicuous a place in the annals of Persia under her more favoured dynasties. Few places have fallen so suddenly, even in a country where changes are so rapid and frequent. The great cause of this decay has been that which is contributing daily to the ruin of the fairest part of the empire—bad government and oppression. The plague, a few years ago, gave an additional impulse to the fall of this city, having destroyed nearly half the population of the province of Khúzistán. Shushter never recovered this blow.

* Among other things, he built a lofty tower of living men; they were placed horizontally, one above another, and closely united together with mortar and cement, their heads being left exposed. Some of these unfortunate beings lived several days, and I have been informed that a negro did not die till the tenth day. Those who could eat were supplied with bread and water by the inhabitants of Shíráz, at the gate of which, this tower was built. It still exists, an evidence of the utter callousness to cruelty of a Persian invested with power.

Shushter is situated at the foot of a low range of sand-hills running parallel with the great chain and about 5 farsakhs* distant from it. The river Kárún immediately above the town, is divided into two branches; that to the N. is the original channel of the river, that to the S. is the celebrated Nahri-Mas-rúkán,† or the artificial canal now called the Ābi Gargar.‡ In Sir John Macdonald Kinneir's work on Persia, and in his map, the positions of the river and the canal are reversed, which, as he himself visited the place, is unaccountable. The town is surrounded by the Ābi Gargar, the river Kárún, and a small canal connecting the two; these form its natural defences: the old walls are in ruins. On a rock rising boldly from the river, to a considerable elevation, stands the castle: on one side alone it is defended by the river. The high ground rapidly falls to the level of the city, and the castle itself is commanded by higher positions; it is consequently a place of no strength, and would be incapable of defence even against a Persian army, supposing the town to have fallen into the enemy's hands. Its walls are in a dilapidated state, and unprovided with any defence: it may, however, protect a governor against the violence of the inhabitants in a moment of popular tumult; and has frequently served for that purpose till the occupier was starved out, which, owing to the want of proper supplies, was not long before it took place. In the centre of the castle, there is a large and substantially built house, which serves as the residence of the governor or any other great personage visiting the town. The rock on which the castle stands has been perforated, and a subterranean canal is carried through it; several shafts having been dug down to this canal, it, together with the river, supplies the interior of the building with water. The town itself, though reputed in Persia a place of great strength, is, under existing circumstances, far from being even tolerably fortified, but might undoubtedly be rendered a very strong and important position.

The Kárún issues from a low range of sandstone hills after traversing a narrow and difficult gorge. About two miles from its entrance into the open country, it is divided into two branches, the Kárún, and the Ābi Gargar. The Ābi Gargar is an artificial canal, and at the point of its separation from the main body of the river a large and massive band, or dam, has been thrown across its entrance. This band in the summer and

* Eighteen miles.

† Musrikán in *Abú-l Tulá* (Geogr. p. 58); strangely misread and printed Mushirkán in Jaubert's translation of *Idrisé*, i. 379. It signifies "Sharper's River."—F. S.

‡ This canal is still called *Dú Dangah* or the two parts, a name which from its size relative to the river Kárún (called the *Chahár Dangah*, or four parts) it possessed in the time of *Timúr*. It is now, however, usually called the *Abi Gargar*, from the quarter of the town by which it flows.

autumn, is perfectly dry, and may be traversed on foot, six narrow openings being left for the passage of the water. It is constructed of massive blocks of hewn stone, firmly and closely united. It was repaired by Moḥammed 'Alí Mírzá, and has since retained the name of Bandi Sháhzádah,* having been formerly called the Bandi Kaīsar.† Beyond this dyke, the canal flows between very lofty cliffs of sandstone. The rock has been cut through; and although the sandstone is easily excavated, and does not offer much resistance, yet this is a very gigantic work. Half a mile beyond this band is a second, built almost to a level with the cliffs on both sides. It forms a complete barrier to the water, which, escaping through numerous passages cut laterally through the rock, falls in cataracts into the bed beneath. The level of the canal's bed below this band, is considerably lower than above it—a bridge, or communication, is thus formed between Shushter and the village of Boleítí, on the opposite side of the Ābi Gargar. The massive structure of this band renders its destruction by the inhabitants, in case of the approach of an enemy, almost impossible, even if some weeks were devoted to the attempt. It was built, or rather repaired, by Moḥammed 'Alí Mírzá, and was formerly a bridge of a single arch spanning the canal. It is now generally called the Pul-Boleítí, "the bridge of Boleítí." Beyond it, the Ābi Gargar flows with a broad and deep stream, between steep and lofty banks, till its junction with the Kárún at the Bandi Kír, about eight farsakhs‡ below Shushter. The main body of the river washes the base of the rock, on which stands the castle. A small canal is cut through the rock, and after issuing from its subterraneous channel, flows at the foot of the old walls till it unites with the Ābi Gargar below the town. It is fordable in all parts of its course, except during its passage through the rock: it is seldom above three feet in depth, and cannot be rendered much deeper. The river Kárún forms the boundary of the town to where a massive band has been thrown across it, serving as the foundation of an ancient and substantial bridge. Both the band and the bridge are now very much out of repair; the latter, however, is practicable for troops or guns, but might without difficulty be destroyed. The band is constructed of large blocks of hewn stone, many of which have been completely hollowed by the continued action of the water. It has given way in several places, and unless speedily repaired, will be entirely destroyed. The river Kárún is here a broad and deep stream, and at no time of the year fordable. The space between the river and the two canals is occupied by the town, from one part of which the castle is

* Prince's dam.

† Cæsar's dam.

‡ Thirty miles.

commanded. The banks of the river are low, and the ground rises gradually from the small canal. The cliffs to the right and left of the Abi Gargar are of equal height.

Shushter is divided into twelve mahallahs, or quarters; some of them, however, are almost in ruins. Its population is reported to have amounted formerly, and even during the government of Mohammed 'Alí Mírzá, to 45,000 souls. I am inclined, however, to think that it has been much exaggerated. At present it certainly does not contain more than 10,000 inhabitants. The Shushteris are not wealthy, but at the same time there is less actual poverty and destitution in this town than in any other I have seen in Persia. They are bigots in religion, and attend strictly to its outward rites and ceremonies. Seyyids, and Mullás have a great influence over them. The population is, on the whole, moral; and crimes, except on occasions of popular ferment, appear to be of rare occurrence. The Arabic language is generally understood, although the Persian prevails, and the Arabic dress is at the same time affected in preference to that of Persia.

Shushter has several popular chiefs, who are principally Seyyids and members of ancient families. The most powerful among them is Mírzá * Sultán 'Alí Khán, the nephew of the late Mírzá 'Abdullah Khán, who for some years was governor of 'Arabistán. He possesses seven quarters of the town, and can raise a considerable number of well-armed adherents. He has maintained his position in Shushter chiefly through the support of Mohammed Takí Khán, who, as I have before observed, always enjoyed a considerable authority and influence in the town. Mírzá Sultán 'Alí is suspected by the Persian government, who considered him too much attached to the Bakhtiyárí chief; and he and the whole of his family are very ill affected towards them. The Mo'tamid, on his last visit to Shushter, raised Aghá Mohammed Zamán to the chief rank in the town. Mírzá Sultán 'Alí, however, bears a very high character, and is much liked in Khúzistán.

The chiefs next in importance are—Mírzá Hosein Khán, Sultán 'Alí Khan, commonly called Aghá, or Āā Sultán 'Alí, Mírzá Sultán Mohammed Khán (these three are Seyyids), 'Azízu'llah Khán, and Aghá Mohammed Zamán. They divide the remaining five quarters of the town, and have each a small body

* The title of Mírzá is generally taken by Seyyids of rank in this part of Persia, and is a contraction of Amírzádeh, the son of an Amír, i.e. commander or prince; thus Mírzá Koma Khán, Mírzá Mansúr Khán, &c., &c.*

* About the court, every man of family prefixes this title to his name, and it then corresponds nearly with our Mr. When it follows the name, it has the exclusive and influential meaning of prince. Thus 'Abbás Mírzá was the title of Fet-h, 'Alí Sháh's eldest son.—F. S.

of horse and foot. They are sometimes at variance, and sometimes at peace, with Mirzá Sultán 'Alí, except Aā Sultān 'Alí and 'Azízu-llah, who are his declared enemies. They have generally quarrels between themselves, and appeals to arms, and consequent bloodshed are of common occurrence. They are all more or less disaffected to the government.

Khúzistán, exclusive of the Cha'b country, is now rated at 46,000 tóman annually. Of this sum Shushter, Dizful and the Arab tribes dependant upon them, pay 40,000—the remaining 6000 are raised in Hawízah. Moḥammed 'Alí Mirzá is said to have collected 100,000 tóman annually from 'Arabistán,* without the injustice or oppression exercised by the present governors. After deducting the annual sum paid to the Sháh, the considerable outlay made yearly by that prince in the repair of canals and dams, and in other improvements, and his salary as a local governor, nearly 50,000 tóman must have been deposited in his private treasury. The local governor of 'Arabistán receives yearly 5000 tóman; this sum is contributed by Dizful and Shushter, and is not included in the annual tribute. He generally resides in Dizful, and is seldom accompanied by more than fifty or sixty horsemen. He has little real power in the province, and is generally for some act of injustice or oppression, murdered or expelled before one year of his government has elapsed.

The inhabitants of Shushter are usually divided into as many parties as there are chiefs. The consequence of these divisions is manifest—frequent disturbances take place, which generally terminate in bloodshed. The jealousies existing between the chiefs are fomented by the government, to which they thus easily fall a prey. Besides these political chiefs there are many Seyyids in Shushter of high reputation and great influence, backed by a reputation of sanctity. Although they take no open part in political dissensions, they are frequently, in fact, the chief promoters of them. He who can insure the support of these holy men, with the addition of Mushtebids† and Mullás,‡ who may be compared to high priests and common priests, is the most certain of success in the province of Khúzistán.

The political condition of Dizful is in almost every respect similar to that of Shushter; the two towns are generally spoken of in Persia as one. The manners, customs, and condition of the inhabitants are similar. Unlike Shushter, however, Dizful recovered, after the plague, a part of its previous prosperity, and its population is probably now on the increase. It is situated a few miles from the foot of the hills, on uneven and stony ground,

* The country of the Arabs.—F. S.

† Masters of legal knowledge, doctors.

‡ Confessors.

forming the commencement of those vast plains which stretch towards Hawízáh and the Shattü-l 'Arab. Dizful is divided into eight Mahallahs, or quarters. Four of them belong to Hájí Reshíd Khán; two to Mohámméd Taqí Khán, son of Mohámméd 'Alí Khán; one to Muṣṭafá Kulí Khán; and one to Aā Kerím.

Dizful, like Shushter, has its own chiefs, each of whom can collect a small body of armed men, and exercises unlimited authority over the quarter of the town in which he resides. They are continually at variance with each other, and disturbances are daily taking place. In 1841 Mohámméd 'Alí Khán, one of the most powerful of these chiefs, having rendered himself obnoxious to some of the principal inhabitants, was attacked and murdered in the bath. Before the arrival of the Mo'tamid in Khúzistán, Muṣṭafá Kulí Khan was the principal Aghá of Dizful. Having been suspected of appropriating large sums due to the government, he fled to Baghdad, but has since returned. Mohámméd Taqí Khán was appointed deputy-governor of the town, but Hájí Reshíd Khán has the real authority. The other chiefs are Aā Kerím, Aá Al Naghí, and Seyyid 'Ísá.* Dizful suffers as much from its Aghás, as it does from the Persian government. They are continually plundering and oppressing the inhabitants, and all, except perhaps Muṣṭafá Kulí, are men of little character or ability.

Dizful is now the principal market of Khúzistán. Its bázár is, however, inferior to that of Shushter; the merchants offering their goods for sale chiefly in caravanserais or in their own houses. Its population may be about 15,000, although it is generally believed to amount to 20,000. Its houses are not so well built as those of Shushter, and the streets are narrower. The river flows to the N.W. of the town, and is crossed by a fine bridge of twenty arches: its foundations of stone are evidently ancient, but its upper portion of brick is of a more recent date. The river is fordable in several places at Dizful during the summer and autumn.

Seyyids, Mushtehids and Mullás have as much power here as in Shushter, and are equally forward in creating tumults and dissensions. The inhabitants are bigoted, and remarkably punctual in the observance of the ceremonies and duties of their religion.

From Shushter and Dizful families have been daily emigrating to the country of the Bení Lám Arabs, of the Cha'b, and to Baṣrah. The inhabitants are greatly oppressed by their chiefs and by the Government. It would be impossible to describe the scenes to which, during a few months' residence in Khúzistán, I was daily a witness: houses were plundered, crops burnt, and

* 'Ísá is Jesus, a very different name from Esau, into which it has often been converted by Englishmen.

villages destroyed; the most influential inhabitants were daily exposed to torture, the Ra'yyats completely ruined; the bázárs shut, and people almost afraid to venture into the streets. The taxes for the year were raised three times, and the chiefs, moreover, were compelled to exact money from their adherents to satisfy the rapacious avarice of the Mo'tamid. Barátdárs,* or holders of Government orders for money, swarmed in the towns and villages, and, being encouraged by the presence of the Mo'tamid, were guilty of the greatest excesses. The Persian soldiers lent small sums of money to the unfortunate inhabitants, who were compelled to borrow in order to satisfy the demands of the Government, at an enormous rate of interest. Women and men were stripped naked in the streets, and murders were of daily occurrence. The Mo'tamid was perfectly indifferent to the frequent petitions of the unfortunate Ra'yyats, and appeared rather to encourage than to discountenance these enormities. His troops were without pay, or even means of subsistence, and they lived upon the plunder of the country.

The Government accounts of Shushter and Dizful are kept by a Musta'fi;† they are, however, greatly neglected, and are generally in arrears. The chief of each quarter collects the appointed sum from its inhabitants; but very seldom pays to the Government that which he has received, but, appropriating it to his own use, is compelled, when called upon for payment, to oppress all within his power, in order to raise the amount a second time. He will even very seldom give a receipt for money received from a Ra'yyat.

There are several Arab tribes considered as dependencies of Shushter and Dizful. They occupy the plains to the W. of those towns, frequently settle in small villages, cultivate corn, barley and rice, and tend large flocks of sheep. They have their own petty Sheikhs, who enjoy an almost unlimited authority over them.

The largest, a tribe dependent upon Shushter, is the 'Anáfijah, occupying the right bank of the Kárún, below the Bandi Kír. They possess large flocks of sheep and camels, and are entirely I'liyát. They are under Sheikh Zendí, who has about 300 horse and 400 foot. The Arab tribe occupying the Miyánáb,‡ or district to the S.W. of Shushter, between the river Kárún and the Ābi Gargar, is partly composed of 'Anáfijah, and partly of refugees from other tribes. They possess the Bandi Kír and several small villages. The Āli Khamís and the 'Anáfijah are, I believe, branches of the large Arab tribe of Meidán.

* A barát means an exclusive privilege, releasing from payment of taxes, &c.—F. S.

† A Receiver-General.—F. S.

‡ Interamne, vulgò, Miyándáb.—F. S.

The extensive tribe of *Ali Kethír*,*—"the many"—occupies the district of *Dizful*, the plain between the river of *Dizful* and the *Kárún*, the country between the *Sháwúr* or *Shápúr* and the river of *Dizful*, and the left bank of the *Kerkhah* with the plains of *Shúsh* or *Susa*. It is divided into the following branches:—

Bení Mo'allá	Ebú Teráíf
Bení Ma'amah	Tarbúsh
Mo'áwiyyeh	Ráshid
'Alí Lowweh	Madeyyeh
El Mu'áneeh	Delfiyeh
Zehiriyah	Deílím
Bení 'Aqbah	Rawáshid
Cha'b	Hanakúyeh
Melá'in	Ebú Seyyid.
Zabbah	

This tribe possesses many villages and small mud forts, as *Komát*, *Kheir-ábád*, *Mashkeít*, &c. &c., and is extensively engaged in the cultivation of the soil. Each division has its own Chief, and many of the villages are in the hands of *Seyyids*. They are all, however, under *Sheikh Resáj* and *Sheikh Káfil*, who are recognised by the government as the heads of the tribe. They possess several small tribes of *Ra'yyats*, such as *Shawálf*, *Terjuwah*, &c. &c., who are engaged in agriculture in the immediate neighbourhood of the town of *Dizful*. The *Ali Kethír* may probably consist of between 14,000 and 15,000 families, and they furnish a very good body of irregular Arab cavalry. They have lost much of their character as Arabs, and being engaged almost entirely in cultivating the land, seldom openly plunder or war with the neighbouring tribes.

The *Ali Kethír* is composed of fragments of various tribes, but the original stock is said to be of the tribe of *Nebán* from *Nejd*.

The divisions which occupy the plains of *Shúsh* or *Susa* are the *Cha'b* and *Zabbah*.

Hawízah and its dependant tribes form with *Shushter* and *Dizful*, the province known by the Persians as '*Arabistán*.'† Formerly the whole of the province was under the chief of *Hawízah*, who was called the *Wálf* of '*Arabistán*.'‡ The authority of this chief, moreover, extended over the *Cha'b* Arabs, the *Bení Lám*,

* *Kesír* in the author's list, but probably by error of the Persian transcriber, as he would so pronounce the Arab word *Kethír*.—F. S.

† The land of the Arabs.

‡ There were four *Wálís* in Persia, each of whom ranked as an independent prince; hence the king of Persia was called *Shákinsháh*, or king of kings. Three of them, the *Wálís* of *Luristán*, '*Arabistán*', and *Gurjistán* still retain the title, but only one, the *Wálf* of *Kurdistán*, has any portion of the ancient power.

* This is probably a local fiction, and is not sustained by any ancient authority. *Wálf* in Arabic signifies governor, and is an inferior title.—F. S.

Wásit on the Haï, and even to the Montefik. He now possesses only Hawízah, and a few tribes encamping on the banks of the river Kerkhah, but still retains the title and assumes the dignity of an independent chief. The present Wálí is descended from a very illustrious family of Seyyids. The following is the history of this family, as I received it from him. Its founder was a Seyyid of Medínah, and a man of importance and distinction, who quitted his native town about 500 years ago.* His descendants settled in Wásit, on the river Haï, about the reign of Sháh Khodábandeh, and were the chiefs of a few tribes of buffalo herdsmen. They subsequently crossed the Tigris, and obtained the chieftainship of two tribes that dwelt near the site of the present town of Hawízah. Neis, Salámát, and five or six small tribes also accompanied them from Wásit. The first permanent settlement was made by Mullá Moḥammed below Hawízah, and the town was called Ghemaniyan. This was in the reign of the first of the Şefaní kings, with whom, it was said, the Wálí was connected by marriage. The son of Mullá Moḥammed, Mullá or Wálí Sultán† Hosein, built the castle of Hawízah on an island in the river Kerkhah. He it was who first collected the tribes, and assumed an important position in the province. His grandson, Mullá Bedr, penetrated into Arabia, and reached Mecca, having defeated the Arabs in many engagements. He brought the tribe of Sheríf from the holy city, and established them in Hawízah. The Wálís had now acquired considerable power. Shushter and Dizful belonged to them, with the whole of the low country as far as Bihbahán, with Zeitún and the Cha'b country. The island formed by the Euphrates, the Tigris, and the Sha-el-Haï, was also in their possession, and the Bení Lám and part of the Montefik Arabs acknowledged their sway. The Wálí, it is pretended, was able to bring 130,000 men into the field, and possessed a body-guard of 18,000 horsemen, who were always ready for war, and slept under his castle-walls. Their mares, of the best Arab blood, were, together with their arms and accoutrements, the property of their riders. The power of the Wálí has gradually been declining, and Hawízah and a few small Arab tribes only now recognise his sway. The chiefs of the Arab tribes do not sit down in his presence unless invited, and in some way consider him a royal as well as a sacred personage. The present Wálí is Mullá Feraju-allah.

The town of Hawízah suffered much from the plague, but it owes its almost total destruction to a very remarkable event. The

* Circa 1350; A.H. 751.—F. S.

† Sultán is here, doubtless, a religious, not a civil title. These Mullás were probably Dervishes or Fakirs, i.e. members of religious orders, in which the higher ranks bear such titles.—F. S.

river Kerkhah formerly ran through the town, a few miles above which a massive band or dyke had been constructed to retain the waters necessary for irrigation. About seven years ago (1837) the river had risen to an unusual height in the spring, and the dam, which was an ancient work, suddenly gave way. This occurred in the night, and the town, which in the previous evening had been traversed by a broad and noble stream, in the morning stood in the midst of a waterless desert. The greater part of the inhabitants immediately deserted the place, and constructed temporary huts near the new channel of the river, while others dug wells in the bed of the stream, now dry, and thus obtained a small supply of water. As no steps have been taken to repair the band, the river has not resumed its ancient course, and the town has consequently fallen into ruin. The lands also in the neighbourhood, owing to the destruction of the canals and water-courses, have been thrown out of cultivation. Little water, and that of bad quality, is obtained from the wells. The river divided itself into innumerable small streams, formed vast marshes, and was not again collected till it had advanced within 8 miles above the *Shaṭ-el-'Arab*, into which it at length discharges itself. Thus none but small boats or *Beilams** alone can now reach the town, while formerly vessels of a moderate size could ascend the stream. The inhabitants of *Hawízah*, being without water, joined the Arab tribes that usually encamped in the neighbourhood, and formed settlements on the banks of the various streams into which the river is now divided. About 500, among whom were a few *Sabæans*, alone remained, and the houses have gradually disappeared.

The inhabitants of *Hawízah* are chiefly Arabs, and are divided into four tribes—*Sádát*,† *Neïs*, *Kútú*, and *Sakí*.‡ The principal tribes dependent upon the town are *Āli 'Arús*, *Sheríf* (this tribe is a branch of the *Mecca Sheriffs*) *Bení I'zar*, *Bení Hardán*, *Šádir*, and *Salámát*. There are many small divisions or families, but I do not possess their names. During the summer and autumn, they inhabit the banks of the *Kerkhah* and the marshes; in the winter and spring they travel into the desert on both sides of the river where, at those seasons, they find pasturage for their cattle and flocks.

The territory immediately appertaining to the *Wálí* comprises

* *Beilam* properly means a cotton-pod, and thence a cockleshell-boat.—F. S.

† There is probably some error here. These are rather names of families than tribes; *Sádát* signifies *Sayyids*, and is equivalent to *Shurefá*, the plural of *Sheríf*. Those epithets (*Sayyid* and *Sheríf*) which signify Lord and Pre-eminent, are exclusively applied to the descendants of the Prophet, and not names of tribes.—F. S.

‡ This tribe emigrated originally from *Luristán*, where some of its members are still to be found. There is a small branch of the *Kúhgelú* tribe (*Dushmanziyóri*, I believe), also dependent upon *Hawízah*.

the deserts to the right and left of the Kerkhah, commencing about 8 farsakhs* below Shúsh, and extending to Şuweib, a village situated near the junction of that river with the Shaţ-el-'Arab. Five thousand men is, I think, the largest number that could be raised by the Wálí, and these but indifferently armed. Moḥammed Taqí Khán took possession of Hawízah without difficulty about five years ago (1839).

The annual tribute of Hawízah and its tribes is 6000 tó máns, but the government cannot raise this sum. The Wálí is now nearly 24,000 tó máns in arrear, and the Mo'tamid has lately been endeavouring, but in vain, to exact it from him. The Arabs are greatly impoverished, and the Wálí himself is actually in difficulties from want of ready money. He is, as may be conceived, very ill-affected to the government, and has certainly good reason to be so. He was for some years a prisoner in Kirmánsháh, and his family has been completely ruined. He is not a man of much ability, nor is he generally liked in Khúzistán. He was the chief adviser of the Mo'tamid in his expedition against the Sheikh of the Cha'b Arabs, and in his campaign against Moḥammerah. He is found very useful in intriguing among the Arab tribes, with whom he is well acquainted, his sacred character as Seyyid giving him considerable influence among them. He has since that time been appointed governor of Khúzistán by the Mo'tamid.

The territories of the Sheikh of the Cha'b Arabs are not described with much accuracy in any of our maps. I believe the following to be their limits. An imaginary line drawn from above Waís, a village on the river Kárún, to Khalf-ábád,† a village on the river Jerráhi, and continued by the Zeítún hills to the Zobreh or river of Hindiyán, on the N.E.; the river of Hindiyán on the E.; and the sea on the S.; and the Kárún on the W., as the tribes under the Sheikh, inhabit the western or right bank of that river, but do not extend far into the interior. They also occupy its banks from Ahwáz to its junction with the Shaţ-el-'Arab, and both banks of the Bahmehshír, to the Persian Gulf. The most important rivers in Persia thus traverse the country in the possession of this Sheikh. The district occupied by the Cha'b Arabs is at the same time of great extent, and it is necessary, in accounting for the smallness of the population, to remember that the interval between these rivers is in general a complete desert, without any supply of water except during the rainy season, and in the months immediately succeeding.

The following tribes acknowledge the authority of the Cha'b Sheikh.†

* Thirty miles.

† Khalfat-ábád †

‡ It is very difficult to obtain from Arabs particulars of the divisions and subdivisions of their tribes. The table I have given was drawn up after comparing many different accounts, but I cannot entirely rely upon its accuracy.

TABLE OF CHA'B ARABS.

Great Tribes.	Division.	Subdivisions.	Name of Sheikhs.	Residence.
Cha'b (Ka'b).	Āli Bū Nāṣir Idris . . .	El Sakhereh	Thāmer Salmān	Fellāhiyah. Left bank of the lower part of the Kārūn and of the Bahmeb-shīr.
		Āli Bū 'Alī		
		Āli Bū Madehī		
		Āli Bū Badī'		
		El Ghanam		
		Āli Bū Dalleh		
		Āli Bū Sūf		
		El Haffādelleh		
		Thawāme		
		Shileishāt		
		Rūbahāt		
		Soweilāt		
		Rawājileh		
		Towejāt		
		El Feyyāl		
		El Koweiseb		
		Āli Bū Maḥmūd		
		Āli Bū 'Alāfi		
	Nasārā	Hājī Mash'al and Kerrey- yid.	Right bank of the Bahmeb-shīr and southern part of Moḥammerah.
	Moḥaisen . .	Mejd-ed-dīn	Hājī Jāber	Right bank of the lower part of the Kārūn and the northern part of Moḥammerah.
		Khanāfirah		
		El Mātesh aşfer		
		Motuwwar		
		Buweisher		
		El Hallālāt		
		Derārjeh		
		El Maḥāmīd		
		Beit Mosāhil, or Ebn 'Alī Bāshā.		
		Morārijeh		
	Bāwī . . .	Mo'āwiyah	'Ajīl	Right and left banks of the Kārūn, above and below Isma'iliyah and that village.
		Moṭārīdeh		
		Newāser		
		El Wasseyīn		
		El Wurūmī		
		El 'Ajājāt		
		El Jebbārāt		
		El Mosabbēh		
		Āli Bū Hājī		
		El 'Awūd		
	Branch of the Benī Temīm	El Zerkān	Mīr Madhkūr	Hindiyān, Deb- Mullā, right bank of the river of Hindiyān and Zeitūn Hills.
		Benī Khāled		
		El 'Omūr		
		El Erkither		
		El Shamākhīyeh		
		El Berāshideh		
		El Ḥardān		
		Sherīfāt (Benī Ershed Soleyyeh, El Farūd, &c.)		
		..		
		..		
	Haiderī	Aḥmed . .	Banks of the Jerrāfi. Near Fellāhiyah.
	Hīyāder (i. e. Haideris.)	

The Chief of these tribes, Sheikh Thámir, is of the Āli Bú Násir; his Wazír, Hájí Mash'al, of the Naásará; and I believe these dignities are hereditary in the two tribes. Mír Madhkúr, of the Sherifát, is of the Bení Temím, a large tribe occupying the centre of Arabia. He is a Seyyid.

The authority of the Cha'b Sheikh does undoubtedly extend over all these tribes, when, in absence of aggression from other quarters, he has it in his power, by superior numerical strength, to enforce it; but the Báwís and Sherifáts are large and powerful tribes, and consider themselves more under the protection than under the absolute authority of the Sheikh: still they are unable to oppose him successfully, if he be supported by his own tribes. The former Sheikh of the Sherifát was Mír Mahanná, a liberal and sensible man, enjoying a high reputation for personal courage and skill as a horseman. He opposed Sheikh Thámir for some months, and defended himself in his mud-castle of Deh Mullá. Being at length compelled to surrender, he retired to Felláhiyah, and Mír Madhkúr was invested with the chieftainship of the tribe by Sheikh Thámir. During the last invasion of the Cha'b country by the Mo'tamid, the Sherifáts did not unite with the Sheikh, but pretended neutrality, although they joined the Persian camp. The Báwís have frequently appeared openly in arms against Sheikh Thámir. When Mohammerah was destroyed by the Turks, they supported his rival 'Abd-al-Rizá. The Sheikh of the Cha'b on that occasion took refuge with Mohammed Taqí Khán, who, after the removal of the Turkish fleet, replaced him in Felláhiyah. The Báwís were then eager in seeking a pardon for their late defection, and were again received under the protection of the Sheikh. A short time was suffered to elapse, and the Báwí chief was invited to Felláhiyah, an invitation which he accepted without suspicion; but while drinking the coffee which had been presented to him in the *Majlis* after an entertainment, he was shot dead, together with one of his principal supporters—an act of treachery and violation of the laws of hospitality disgraceful in an Arab, but of which, I believe, Sheikh Thámir has been more than once guilty. The murdered Sheikh was replaced by 'Aqíl, who owes his elevation entirely to Sheikh Thámir. On the invasion, however, of the Mo'tamid, he deserted his patron, and armed the tribe against him. The Zerқан and Bení Kbalíd refused to join the other divisions of Báwí, and went over to Sheikh Thámir. In consequence of this defection, the Sheikh, after the retreat of the Persian troops, expelled the Bawis from Ismá'iliyáh. They fled to Ahwáz and the lower part of the plain of Rám Hormuz.

Being at Felláhiyah when the Persians marched against that place, I had an opportunity of seeing the largest force the Sheikh could, under such circumstances, muster. I was also able, in the

Mo'tamid's camp, to examine the force of the Báwís and the Sherífáts. I believe the number of armed men collected at that time by Thámír to have amounted to about seven thousand, of which three thousand were well armed with muskets and matchlocks, one thousand were horsemen, and three thousand men indifferently armed with spears, swords, &c. &c. The Báwís have about one thousand horsemen; and their foot, which was not at that time assembled, may amount to about two thousand men, but without good weapons. The Sherífáts have about two thousand foot and seven hundred horse. Thus the force of Sheikh Thámír, supposing the Báwís and Sherífáts to have acknowledged his authority, would have amounted to twelve thousand seven hundred men; but the Persian government is too well acquainted with the dissensions existing among the Chiefs, is too well able to foment them, and, by bribery and other means, to detach many of them from their allegiance to the great Sheikh, to suffer this large number of men to be collected when in opposition to itself. I believe I have stated the disposable force of the Báwís and Sherífáts at its fullest extent. The Sheikh of the Cha'bs might perhaps collect a larger body of men than that which I found in Felláhíyah, but unprovided with useful arms. The Sheikh, in wars with his own and other tribes, chiefly relies upon three small guns,* better mounted than those I have seen in the Persian service, and worked by forty Persians, who had been drilled by a fugitive artilleryman from Tehrán. They proved very serviceable in contests with the Arabs, who are very unwilling to face artillery; but the men employed in working the guns were little to be depended upon, and totally deficient in courage and a knowledge of their business. The Sheikh possessed several unmounted guns of various calibres, two of which, about twelve feet in length, had been placed on the walls as a defence to the town. They were, however, old, and scarcely fit for use. He was also the owner of two or three bombs and mortars, but was unable to use them. The Persians have since destroyed all the unmounted guns.

The town of Felláhíyah is surrounded by a mud wall, with equidistant towers now almost in ruins. It is a place of no strength, but has a strong barrier to invasion on the Persian side, in its many deep canals and watercourses, which would render it, if defended with any degree of firmness, utterly unapproachable by an Oriental army. The river Jerráhí, about 2 farsakhs † above Felláhíyah, is divided into two branches, one of which, generally termed the Nahr Búsí, runs into the sea at Khór Músá ‡ near Bender Ma'shúr; the second, continuing its course

* They are English guns, and, I believe, of 4 lbs., 8 lbs., and 12 lbs.

† Seven and a half miles.

‡ Gulf of Moses.

through Felláhiyah, is eventually lost in irrigation, except a small artificial branch of it, which finds its way into the Kárún, about 10 miles above Mohammerah. The accompanying sketch may afford an idea of the position of Felláhiyah; and the names, courses, and number of the various canals and watercourses derived from the river.

I subjoin a list of the canals, and villages near Felláhiyah:—

<i>Villages.</i>		
Kareibah.	Afshár.	Moseyyer.
Bonef Boneyúm.	Kází.	Júnjerí.
(Beyán?)	Búsí.	
<i>Canals.</i>		
Kazaliyeh.	Jedídeh.	Shakhíyah Ghanam.
Ommu-l-sakhar.	Mobáderí.	Júnjerí.
Jaffál.	Shákkeh Ahmed.	Abbaj.
Zerák.	Besháshiyeh.	Husein-Begí.
Sabáhiyeh.	Shakáliyeh.	Kolfí.
Žilzilíyeh.	Tápchí.	Afshár.
Monafiyyeh.	Menduwán.	'Anáyáti.
Bení Shattal.	Shawáli.	Moseyyer.
Mezeráwi.	Ghiyádhí.	Boteínát.
Felláhiyah.		

These canals are of little importance during the dry season. The Júnjerí, Kolfí, and Ommu-l-sakhar alone being unfordable: during the rains, and the months succeeding, they are generally filled with water to the depth of 6 or 7 feet. The river Jerráhi is deep, its banks steep; and in the narrowest part (above its division into three large canals immediately above Felláhiyah) 55 yards in width, and frequently nearly 100. A large dam at the separation of the three canals of Ghiyádhí, Felláhiyah and Boteínát, forms a barrier to the further progress of the river, and thus insures a supply of water in the smaller canals for irrigation. When the dam, or *Kashwah*,* is in repair, the three large canals beyond it are fordable: when it is destroyed, which is always the case on the approach of an enemy, they become deep and broad streams, and the country around Felláhiyah is flooded; and thus an additional defence is obtained against invasion. The dam is constructed of mud and reeds, easily broken up, and as easily replaced. The smaller canals have generally each a dam of the same construction, to regulate their supply of water, which is all absorbed in irrigation, except in those of Felláhiyah, Júnjerí, and Kolfí; the two latter, when united, form a deep and broad stream, up which vessels from Koweit and the Arabian coast frequently sail. The tide rises from 5 to 6 feet, even above the village of Búsí. I believe that neither the Nahr Júnjerí nor the

* In the MSS. *Kashwah*.—F. S.

Kolfi occupy the original bed of the river until their junction: that bed appears to have been between the two. The Felláhiyah and all the other branches are evidently artificial.

It will be seen from the accompanying sketch, that if Felláhiyah were well defended, it would be a place of considerable strength—if the attack were made from the N., N.E., or N.W., the only quarters from which the Persians could well march upon the town. In the spring of 1841, the Mo'tamid proceeded along the banks of the Jerráhi, from the plain of Rám-Hormuz, and first encamped above the village of Kareibah. He afterwards advanced to the canal called Ommu-l-šakhar; and, being detained there in constructing a bridge, was attacked during the night by the Arabs, and, although not compelled to retreat, immediately retired; probably foreseeing the inutility of further advance from that quarter. Subsequently, he formed a plan, at the suggestion of the Wáli and of the Báwis, of floating his troops down the river Kárún to Mohammerah, and of advancing on Felláhiyah from that point. In the autumn, accordingly, he descended to Mohammerah; but the Sheikh of the Cha'bs, not having sufficient reliance on his tribes, shipped his guns and property, and fled to Koweit.

On the approach of an enemy, the numerous villages on the banks of the Jerráhi are deserted; and the inhabitants, at an hour's notice, transforming their reed huts into rafts, float with their property into Felláhiyah. The villages in the neighbourhood of the town, immediately follow their example; and a crowd of men, women and children collect within its walls, or in the surrounding date-groves—their presence being highly inconvenient in cases of siege, particularly among Arabs, who lay up few provisions for the future. During my residence in Felláhiyah, when a siege was daily expected, the flocks collected were so numerous, and pasture so scanty, that eight and ten lambs, without the skins, were sold for one korón, or a shilling. The Sheikh has generally a considerable supply of dates, and some of this fruit, with a little flour, was daily distributed among those assembled for his defence.

The Cha'b Arabs came originally from Wásiṭ and the marshes near the junction of the Tigris and Euphrates.* They were buffalo-herdsmen; and, settling on the Delta formed by the estuary of the Shaṭ-el-'Arab and the Kárún, they founded the town of Goban (Kobbán)†. The country they now inhabit, was at that time occupied by the Persian tribe of Afshár, and the

* The Cha'b Sheikh informed me that the tribe emigrated from Koweit and the Arabian coast of the Persian Gulf. Some divisions of the tribe may trace their origin to that part of Arabia.

† Kobbán is not modern in origin, as it is mentioned by the older Arabian geographers.—F. S.

town of Dórák* was their principal settlement. The Afshárs allowed them to settle in the lower part of the country upon paying a tribute of butter and other produce of their cattle. To the Turkish† government they also paid a yearly sum for occupation of lands near the Euphrates; and the Sheikh probably received his yearly investiture from the governor of Basrah. Kobbán, which then stood on one of the arms of the Kárún, was their principal settlement, and a place of some consequence. They soon afterwards ascended the Jerráhi, and pitched their tents around a small *tappeh*, or artificial mound, on which rose the modern town of Felláhiyah. The Afshárs objected to this encroachment on their territories; but the Cha'bs excused themselves by saying that the pastures of the Jerráhi were better suited to their buffaloes than Kobbán, where they did not prosper. They were suffered to remain; and soon afterwards a ditch was dug round the *tappeh*, upon which the Afshárs again remonstrated. The Cha'bs answered, that the ditch was constructed to preserve their buffaloes, which were carried off almost every night by their neighbours. The Afshárs were satisfied. The following year, however, a stout mud-wall was raised within the ditch, and the Cha'bs were in a state to resist an enemy. The Afshárs, finding that they were likely soon to throw off their authority altogether, invited the Chief of a neighbouring tribe to assist them in expelling the Arabs from the country. This Chief entered the field in the spring, but, falling ill, was compelled to return, and the expedition was deferred till the autumn. In the interval the Afshárs concluded a peace with the Cha'bs, which they intended to break as soon as it was in their power to do so. Of this the Arabs were aware, and formed a design of expelling them before they could receive assistance. They accordingly made a feast, to which the Afshárs were invited. As they were eating, the Cha'bs fell upon them and slew them to the number of fourteen, all of whom were chiefs of the Dórák Afshárs. They then applied to the Wálí of Hawízah, who was sovereign of the country, to assist them in driving out the Persians. "We are Arabs," said they, "and consequently the Wálís' brothers. It is better that we should be his subjects; we are willing to render the same services and pay the same tribute as the Afshárs." The Wálí consented, and marched against Dórák, which was completely destroyed. The Afshárs fled to Lehrowí, where they built a castle, which still retains their name. Some years afterwards, the Begler-Beg‡ of Fárs endeavoured to reconquer the country, but the Afshárs, after a few encounters, were compelled to leave the Dórák country,

* Daurak is placed by Abú-I-fedá in 30° 15' or 32° 20' N. (Geogr., p. 316).—F. S.

† The Khalifs, for Kobbán was founded long before the Turks possessed Baghdad.—F. S.

‡ Chief of chiefs, i.e., viceroy.—F. S.

which has since remained in the hands of the Cha'b Arabs. Kerím Khán* marched against Felláhiyah, and after he had remained there two or three months without being able to cross the numerous branches of the river, the plague appeared in his camp, and compelled him to make a hasty retreat, abandoning his artillery, which fell into the hands of the Cha'bs. Moḥammed 'Alí Mírzá also sent an expedition against Felláhiyah, but retired on the Sheikh's paying the sum of 13,000 *tómáns*. Such is the history of the settlement of the tribe in this country, as recounted to me by members of it.

Sheikh Salmán appears to have been the first Chief of any celebrity in this tribe, and he may be called the founder of the present family. He constructed dams across the rivers, dug canals, built houses and villages, planted date-groves, encouraged commerce and navigation, and finally established his tribes in the country. He appears to have been a man of singular ability, and of a very liberal mind. Thámir is, I believe, the great-grandson of that Sheikh, and succeeded his two brothers in the command of the tribe. Since his flight, one of his relations has been appointed in his stead, by the Mo'tamid.

Sir John Macdonald Kinneir states that the revenues of the Cha'b Sheikh amounted to five laks of piastres (50,000*l.*) a-year; and that he could bring into the field five thousand horse and twenty thousand foot. This is much exaggerated.† I believe his revenues scarcely amount to one-third of that sum: I have given the number of his troops above.

Sheikh Thámir was undoubtedly, for an Arab, a remarkable man. The country owes much of its present prosperity to him. Agriculture and commerce were encouraged, and those engaged in such pursuits protected. Canals and watercourses, upon which the cultivation of this country can alone depend, were kept in good repair, and new works of the kind frequently undertaken. Caravans and travellers through his country were well protected, and cases of plunder were very rare. He had rendered Moḥammerah a flourishing port; and Felláhiyah had become in a great measure the depôt of merchandise supplied to Shushter and Dizful, and to the province of Khúzistán. Merchants connected with him were satisfied with the protection he afforded, and did not consider the dues levied by his tribes exorbitant. He was generally respected by his subjects; and, unlike the Sheikhs of most other tribes, exercised unlimited authority over them, extending to the infliction of death, mutilation, or other punishments. It must, however, be admitted that he was, on the whole, very little to be trusted, and that he was more than once guilty of most unjustifiable acts of treachery. Seyyids and Mullás had an

* The successor of Nádír Sháh.

† But Sir John M. Kinneir visited Persia more than thirty-eight years ago.—F. S.

unlimited influence over him, and among them he distributed large sums of money. He resided at Felláhiyah, and possessed a large muzíq,* where many guests were constantly entertained. In his habits he affected the character rather of an independent prince than of an Arab Sheikh, and was constantly surrounded by a large number of attendants.

The annual sum paid by him to the governor of Fárs was only 3400 tó máns (1700*l.*); an incredibly small sum when the extent of the tribes and the productiveness of the country are considered. Some pretence, however, was always found to exact a larger sum; and the Mo'tamid, although not the governor of the country, obtained 5000 tó máns from the Sheikh during his last visit, besides horses and other presents. The sum formerly paid by the Cha'bs was only 1000 tó máns yearly, which was rather considered by them as a kind of pishkash, or present, than as an annual fixed tribute. Indeed these Arabs scarcely consider themselves as Persian subjects, and no local governor, or even agent of the government, resides in Felláhiyah.

The greater portion of the Cha'b Arabs have now become Deh-Nishíns, or settlers in villages. On the Kárún they possess Weís, Ahwáz, Ismá'íliyah, Idrísíyah, Mohammerah; on the Jerráhi; Felláhiyah, Júnjeri, Bonei-Boneyyán, Búsi, Kareibah, Kází, Dób-el-Mír, Sedeirah Attegeyyah, Hadámah, Boneiwar, Rihánah, Bonehbeyán, Khalsábád, and Cham-Sábít (thus named from its having formerly been entirely inhabited by Sabæans); on the river of Hindiyan; half Hindiyan, Deh Mullá, and Gurgeri; on the sea, Bender Ma'shúr, and one or two other settlements. To these may be added other small villages scattered through the country. Many of them, and indeed almost all those that are on the Jerráhi, are composed of huts built of reeds. Villages are daily rising, whilst others are as frequently falling into decay, owing to consumption of pasture, destruction of watercourses, or other causes which must influence the state of an erratic population depending much upon nature and little upon itself, even for the common necessities of life.

The Cha'bs have lost much of the genuine Arab character. Their Sheikh exercises a despotic power over his dependants, and the usual relation between an Arab chief and his tribe no longer exists. The blood of the Cha'bs has also become mixed, though not perhaps directly, with that of the Persians. They have frequently intermarried with natives of Shushter, Dizfúl, and Behbehán; and the principal wife of Sheikh Thámir was the daughter of a chief of Zeitún. The inhabitants of Khúzistán, it is true, claim an Arab descent; but there is scarcely a family which has not a very marked mixture of Persian blood.

* An asylum, a refuge for the destitute.—F. S.

† Misspelt Sábít in the author's list of names.—F. S.

Many refugees from the principal towns in the province have settled in the territories of the Arab tribes—a common place of refuge for political offenders. The chiefs of the mountains have also frequently intermarried with Arabs, and the celebrated Bakhtiyári chiefs, 'Alí Mardán, Reshíd, and 'Alí Šálíh, were descended from a daughter of the Wálí of Hawízah.

The Bení-Lám Arabs occupy the south-eastern portion of the Páshálik of Baghdád, and are included in that government. Many of the divisions of this very extensive tribe, occasionally encamp within the province of Khúzistán. It is perhaps difficult to determine with any certainty the territories of the Sheikh of this tribe. The Bení-Lám encamp even at the gates of Mendalí, and occupy the country between that town and Bádráí. The plains at the foot of the mountains, from Mendalí to the banks of the river Kerkhah, afford them pasturage for their cattle during the winter, although a portion of this country belongs to the Feilí, by whom it is occupied. The village of Beyyát, which they inhabit, belongs to 'Alí Khán, as well as half the district of Patak. On the banks of the Tigris they are found from the vicinity of Kut-el-Hamrá to almost the junction of that river with the Euphrates.* The low hills dividing the plain of Dasht-'Abbás from that of I'wán-Kerkhah are usually considered as their western boundaries; I'wán being, it is said, on Persian ground. The Bení Lám also encamp on the banks of the Kerkhah, although their territories terminate about eight or ten miles to the west of it.

The tribe is divided into numerous branches, the names of some of which I give, as received from their Sheikhs.

Subdivisions of the Bení Lám.

Chenanáh (Kenánah)	Hiyyíyeh	Belasím	Taurah
Mayyah	Luweimí	Dabeimí	Gereizat
Gheleimí	Zebódah	Dhehebát	Zehríyah
Keseráyi-'Abús-Turkí	Sheitat	Yúráníyah	Sekur
Keseráyi-Shámki	Ebu 'Abd-el-Khán	Sorkah	Artab
Keseráyi-'Alí-Husein	Besháshíyeh	Kersán	Bení Temím
Cha'b	Tukiyál	'Allání	Sa'ad
Seyyid Hasan	Bení 'Akúbah	Murírah	Betúyeh
Derbelú	Soweid	El Tureyyad	Al Bú Móhammed
Zihrij	Al Bú Kabúd	'Ashírat Kelátí	Bú Kamar
Hamel el Hamúd	Beit Herán	Beit Zohrah	Al Bú Daríyeh
Habúbah	Sa'dah	Bení Seyyid	Burrah
El Táif	Sheikh Na'mah	Ben Dahán	Ardisbáh
Ben Khomeis	Beit Mohanná	Al-Rahmah	Ben Mo'alla
Abú Chámel (Kámil)	'Arkán	Menáýil	Rádhí, or Rázi
Haneíyeh	Otreif	Ferásah	Hewár
Mokásis	Seyyid Abú-l	Seyyid Móhammed	Sheikh Ahmed.

* The banks of the lower part of the Tigris are occupied by the Al Bú Móhammed; that portion of the tribe encamping on the left bank usually recognises the authority of the Sheikh of the Bení Lám.

Of these tribes the Kesoráyí-'Abbás-Turkí, Kesoráyí-Shámkí, Kesoráyí-'Ali-Husein, Sheítat, Yúráníyah, Sekúr, and Ebn-'Abdal Khán usually encamp on the banks of the river Kerkhab, within the territories of the Wálí of Hawízah. They were plundered in 1841 by the Mo'tamid—their cattle, horses, sheep, tents, and even wives and children having been carried off, and the men compelled to take shelter in the brushwood near the river.

The Bení Lám, occupying the frontiers of the Turkish and Persian empires, are but slightly dependent upon either. They are continually engaged in plundering expeditions; and in war are most treacherous and dishonest, and proverbially feared throughout the province. Their present Sheikh is Madhkúr; his rival, Sheikh Na'mah, is, however, at the head of many of the divisions. Na'mah bears a high character for courage and hospitality; but Madhkúr is little liked by the tribes. I do not consider him as a man to be trusted, and have certainly very little reason to be satisfied with him.

Although Madhkúr is considered as the chief of the Bení Lám, yet each division has its own Sheikh, who, continually engaged in plundering and in robbing, is very little under his control. Dáwud, Sheikh of the Heyyeh, generally encamping in the Dasht 'Abbás, and Musellim, Sheikh of the 'Abd-al-khán, carried their depredations as far as the gates of Dizful, and plundered or levied contributions upon all caravans passing through the plains. From these circumstances I consider the country of the Bení Lám as very difficult of access, particularly to an European; and although I twice succeeded in traversing it, partly in disguise, I was plundered by those who were sent to protect me, and narrowly escaped on several occasions, with my life. This was the more remarkable, as Sheikh Madhkúr had frequently courted the friendship of the English engaged in navigating the Tigris, and it was under his protection that I entered his territories.

I cannot state positively the number of families composing this very extensive tribe, but I am inclined to think that, with their dependencies, they must amount to nearly 30,000. As I have observed, however, they very seldom all acknowledge the authority of Madhkúr, who has not more than 15,000 armed men at his command; of these, perhaps, 4000 or 5000 are horsemen. In wars with the Montefik Arabs they have been continually defeated; and I believe them deficient in courage.

Madhkúr generally resides at 'Amárat, a few miles below the Hadd, and near the banks of the river Tigris. During the summer the tribes congregate near that river and on the borders of the vast inland marshes formed by its waters. In the winter and summer they usually encamp in the sandstone and gypsum

hills running parallel to the great range, or in the plains at the foot of the mountains. They mix with the Feílí tribes of Pushtikúh, and pasture their flocks on their lands, for which they yearly pay a small sum to the Wálí, 'Alí Khán. They are usually on good terms with the inhabitants of the mountains, whose chiefs continually take refuge in their tents when oppressed by the government, or expelled by their own tribes. The Arab Sheíkhs at the same time, frequently seek an asylum among the I'liyáts of the hills. Thus it is for their mutual interest to be on friendly terms.

The Bení Lám pay a capitation tax to the Páshá of Baghdád, and in 1841 sent presents and sums of money to the Mo'tamid. As they encamp on the Persian territory, the Governor of Khúzistán may perhaps be justified in claiming a small tribute from them. And as they frequently make plundering excursions into the lands of Dizful, and rob Persian caravans, he was certainly justified in expelling their tribe from the banks of the Kerkhah. When encamped on the banks of the Tigris, the Bení Lám are well protected from invasions, on the Persian side, by the vast marshes formed by the Hadd and the Kerkhah.

Sheikh Madhkúr is of the family of Belasím and a Shí'ah.*

It will be seen from the above remarks that Mohammed Takí Khán exercised the chief authority, and filled the most important post in the province of Khúzistán. Shushter was completely in his power; in Dizful he had very extensive influence; he had twice occupied Behbehán, had once taken Hawízah, and had replaced the Sheikh of the Ch'ab Arabs in Felláhiyah. His commanding position was as much to be attributed to his abilities and to his wise policy as to his actual power. He raised himself to it, not without bloodshed, but with as little expenditure of life as is usual in this country. He had acquired a remarkable ascendancy over the Chiefs that surrounded him, and exercised a wonderful control over the barbarous tribes of which he was the head. Among those who immediately acknowledged him as their chief, open robbery was seldom heard of, and when discovered, the offenders were severely punished. From the gate of Shushter to that of Behbehán a single traveller might have journeyed in safety, and during many years no caravans had been plundered in his territories. Between Shushter and Dizful, however, a day's journey, and on a road forming the communication between two large and important towns, robberies were of constant occurrence by the tribes under Ja'fer Kulí Khán and Kelb 'Alí Khán. Latterly he had endeavoured, and with considerable success, to settle many of his subjects in permanent abodes; villages were

* That is, of the sect of 'Alí.

rapidly rising, and his wandering tribes were at length engaging in settled pursuits. For two years Mohammed Takí had not passed the summer in the Sardesís, but had remained in Rám Hormuz, or in the neighbourhood of Kal'ahi Tul, to superintend the settlements which he had founded. In his personal habits he was sober and abstemious, never indulging in vices so prevalent in Persia. He was affable to all, mixing daily with his people rather as their equal than as their chief. During nearly a year's residence with him, I never saw an individual receive chastisement, nor did a case of open robbery* or of violence come under my notice. His revenues were collected according to the fertility of the districts and prosperity of the tribes, never arbitrarily, or by treachery, cruelty, or oppression. The sums apportioned and raised were exceedingly small; and I believe that Mohammed Takí Khán retained but a small surplus after satisfying the demands of the government, and that surplus was generally distributed in charity. Kal'ahi Tul was daily crowded with poor Seyyids, Mullás, and other needy persons from Shushter, who never quitted without Baráts (orders) upon the tribes for ample sums, which were paid as soon as presented. It may well be believed that he was beloved by his adherents, and exercised a great authority over them. He was in every respect a man of remarkable ability, liberal in his views for the improvement of his country, with few religious prejudices, and generally prudent in his dealings with the government. I have observed that Mohammed Takí Khán possessed several villages in Ferídún, and that he had taken refuge there in his youth. He ever afterwards felt a sincere gratitude for the protection he had received from the Christian inhabitants, and would not suffer them to be oppressed or thwarted in the observance of their religion. If they came to Kal'ahi Tul, they were treated with marked attention, and lodged in the chief's Anderún or Harem. Of this I was frequently a witness, and received from the Armenians themselves, assurances of their attachment to Mohammed Takí Khán.†

* I was attacked and robbed, but by a tribe of Dínárúnís, which even Mohammed Takí Khán could never control. He, however, sent to the Chief, and insisted that every missing article should be immediately returned; and I received back the whole of my property. It was my habit to traverse these wild mountains perfectly alone, and never was I attacked or insulted, except on the occasion mentioned, when the country was in a state of war.

† Major Rawlinson accompanied the governor of Kirmánsráh, Bahrám Mírzá, in one of his biennial plundering expeditions against Mohammed Takí Khán, and although employed in hostilities against him, and consequently having little opportunity of knowing his real character, he makes the following remarks on his talents and on the system he pursued. "At the outset of his career," says Major R. (p. 80), "he was the acknowledged chief of his own single tribe, and he owes his present powerful position solely to the distinguished ability with which he has steered his course amid the broils and conflicts of the other tribes. He collects his revenues

It was the policy of this Chief to secure the friendship and alliance of the neighbouring chiefs, and he did not hesitate to assist them, even if in opposition to the Persian government.

Geography.

The general features of the country between Kirmánsháh and Shíráz may be described in a few words. A lofty chain of mountains, running S.E., forms a kind of nucleus. Their summits are frequently within the range of perpetual snow. They are interspersed with fertile valleys, which are well watered, and possess a generous soil. The bellút,* or oak, abounds; and other trees, such as the walnut, pomegranate, fig, vine, &c., are found in the valleys and other sheltered places. These mountains are the Yáíláks, or summer residences, of the Lur tribes. In them are found the sources of those important rivers, the Kárún, Kerkhah, the river of Dizful, the Jerráhi or Kurdistan river,† the Zohreh, &c. They are composed of limestone, seldom contain petrefactions. Their outline is rather undulating than serrated, though they frequently rise into majestic peaks. To the E. and W. of these, and at a considerable elevation above the sea, are found highly fertile valleys and spacious plains. To the E., Feridún, Bázuft, Chahár-Maháll, Jápalak, Sílákkúr, the plain of Burújird, &c. To the W., Mál-Amír, Túl, the plain of Bihbahán, Šeïmmarah, &c. These valleys and plains are either watered by rivers and streams, or owe their fertility to the accumulation of winter torrents, which rushing down from the mountains and finding no outlet, form a lake or reservoir, which lasts till the middle of the summer. Their soil is extremely rich, producing corn and barley, and forming excellent pasture-lands for sheep and cattle. Those to the W. of the mountains are the winter encamping-places of the Lur Iliyáts. Beyond them there occurs a range of hills varying from 5000 to 2000 feet in height, running parallel with the great chain, and consisting of sandstone and a very friable limestone, much intermixed with gypsum. They contain but few springs of fresh water, and abound with pools of naphtha or petroleum, bitumen, and sulphureous or brackish water, and frequently, as at the naphtha-springs near Rám Hormuz, have a burnt and volcanic appearance. The soil also is generally

according to no arbitrary method, but in proportion to the fertility of the districts and the state of his villages and tribes. He has done everything in his power to break the tribes of their nomadic habits, and to a great extent he has succeeded. In Feridún he has purchased very extensive lands, where he has founded numerous villages; and in the plain of Rám Hormuz he has also settled a vast number of peaceful colonists."

* *Quercus ballota*.—F. S.

† In most parts of Asia the rivers are named from the country through which, or the town near which, they flow. Many names known to the geographers even of the fifteenth century, are now forgotten by the natives.—F. S.

covered with a large deposit of saline matter. The summits of these hills are usually tabular; their sides furrowed by innumerable torrents, which sweep down with irresistible violence during the rainy season: they are consequently precipitous, and frequently inaccessible to heavily-laden animals from the western side. On the E. they are on a level with the plains at the foot of the great range. They are seldom inhabited to any considerable extent, except during the winter, when rain-water accumulates in the bottoms, and the hills are then clothed with grass and flowers. The soil is favourable to the growth of corn and barley, and the hills are in general well wooded with the *belút*, or oak, and *konár*.* To the W. of the low hills are those vast plains known by the Persians as 'Arabistán, and stretching in almost one uninterrupted flat to the Tigris, the *Shaṭ-el-'Arab*, and the sea. Such are the general features of the whole of the country between 30° and 34° N. latitude.

Of the rivers, the most important is the *Kárún*. Its principal sources are in the mountains of *Zardah-Kúh*.† The springs are most abundant, and, from its source, the *Kárún*‡ is a large river. On the opposite, or eastern side of *Zardah-Kúh*, are the sources of the *Zendarúd*.§ They are called *Chehel-Cheshmeh*, or "the forty springs." *Sháh 'Abbás* the Great formed the design of cutting through the mountain, and of bringing the united waters of the *Kárún* and *Zendarúd* to *Isfahán*, the capital of his empire. He commenced the undertaking, and before his death it was nearly completed. His successors, sensible of the importance of the work, but desirous of acquiring the honour of its entire execution, recommenced at a different place: the result was, that after great expenditure of money and labour, the river continued in its original bed. A great portion, however, of the work was completed, and the remains, now called *Kor Kánún*, are very remarkable. The river, after forcing its way through lofty mountains by precipitous and narrow gorges, and receiving numerous small streams from the valleys, is joined by its principal tributary, the *Ábi Bors*, a few miles above *Súsan*. This river is almost equal in size to the *Kárún*, and is, I believe, formed to the S. of *Fellát* by the united waters of the *Kersán* and *Ábi-Garín*. These rivers are indicated in *Arrowsmith's* map, but their course, which, according to it, runs towards *Yezdikhást*, appears to be reversed. The *Ábi Bors*, to its junction with the *Kárún*, is a broad and rapid stream, forcing its way through a

* *Zizyphus lotus*, vulgaris or *Jujuba*, the *Chonnarus* of the Greeks.—F. S.

† Yellow Mount.—F. S.

‡ This river is called by the Arabs *Kárún*, by the *Bakhtiyáris* *Kuran*. Both names are used in the province of *Khúzistán*; the proper orthography is probably *Kuran*.

§ Properly *Zendarúd*, living stream.—F. S.

succession of precipitous ravines, and only fordable in one or two places with much difficulty during the autumn. It is crossed on the road between Komishah and Kal'ahi Túl, in the valley of Bors. Artillery and heavy baggage must be taken across on rafts. To the N. of the Ābi Bors is the Ābi Lurdagán, which takes its rise in Jánikí Sardisír, near the village from whence it derives its name. It is fordable in many places, but is generally narrow and deep, with well-wooded banks. After the junction of these streams, the Kárún becomes a large and rapid river. Passing through a difficult ravine, it enters the valley of Súsan. Here I found it fordable in the month of November, but only at one spot, and the ford a very difficult one. Below Súsan, it forced its way through a most precipitous gorge, breaking with great violence over innumerable rocks, which have been precipitated by the mountain torrents into the bed of the river. Here there are the remains of a magnificent bridge; the buttresses, of massive brick-work, are apparently of the Kayánian epoch. They rise to a considerable height from the foaming torrent, and have defied its impetuosity for ages. Even rafts cannot be floated through this narrow and dangerous passage. The Kárún continues to wind between lofty mountains overhanging the valley of Súsan-Sahráb and the plain of Andakú, until it emerges into the plain of 'Akílí. It receives several tributary streams, the principal of which are the Talák, which rises near Kúh-Keimú, and, traversing Tang-Bó Hamid, runs near the foot of Diz Malekán to Ziv-Rúd; and the Ābi Shúr, a large salt stream which enters the Kárún above Lólí.

These tributaries are all fordable, unless swollen by the rains, when they become most impetuous and dangerous torrents. I was carried away by the Ābi-Shúr after one night's rain, though the day before it was scarcely above my horse's knees. The Kárún enters the plain of 'Akílí by a narrow gorge, and here quits the great chain. This ravine has been fortified, and the remains of two ancient castles, probably Sasanian, are found on either side of the river. That to the right is called Kal'ahi Rustam,* and is a very singular ruin. A lofty detached rock rises abruptly from the river, and has been surrounded and fortified to its very summit by great masses of stone, taken from the torrent and united with the most tenacious cement. Around this rock are numerous foundations, also of stone, which appear to mark the site of a town; and in the neighbouring mountains are excavations similar to those found in Shushter, which are evidently burial-places for the dead. The remains on the left bank are called Kal'ahi Dokhtar, or Dódar,† and consist of similar fortifi-

* Rustam is the Hercules of the Persian Romances.—F. S.

† i.e. Daughter's Castle.—F. S.

cations. The Lurs have many traditions concerning these ruins. The castle on the right bank they pretend was built by Rustam, when engaged in a war with a Maiden Queen who occupied the opposite side of the river. It is probable that the principal road into the mountainous region of Elymaïs was carried through this pass, as the principal road to Isfahán, and the Bakhtiýáris now is: it was defended by two castles, the ruins of which occupy the banks of the river. In the plains of 'Aklís the Kárún is a broad and tranquil stream, and would be fit for navigation if not blocked up by the band or dam of Shushter. Here numerous canals and watercourses for irrigation have been drawn from it. The length of its course through the plains is about 10 miles; it is joined by the large salt stream of Beítawand, and shortly afterwards forces its way through the gorge of Kúhi Fedelák, a part of the range of lower limestone and sandstone hills parallel to the great range. The cliffs rise on both sides perpendicularly from the river, and a road has with much labour been excavated on its left bank. This road is an ancient work, and there are many tombs in the rock above the river similar to those of Kal'ahi Rustam. Here also a band, or dam, was constructed, probably to insure a supply of water to irrigate the lands of 'Aklís. All traces of this work have now disappeared. It was called, or the spot is now called, Bandi Dokhtar.* I have already described the river, and its division into two parts at Shushter. About five miles below Shushter, the Abi Gargar is nearly traversed by a band, called Máhsbázán, which is partly natural and partly artificial, having been constructed for the purpose of turning the water upon mills: it prevents the ascent of vessels to the town. Below this dam is the village of Hasám-ábád, where boats employed in the trade between Shushter, Ahwáz and Mohammerah usually anchor. The Abi Gargar below Hasám-ábád is a deep stream with a moderate current, and is on that account usually preferred to the main body of the river for the navigation of the Kárún; its banks are generally high and well wooded. Below Hasám-ábád are the ruins of one or two insignificant kúts, or mud forts. Its entire course may be about 36 miles.

It joins the river at Bandi Kír, having first traversed the remains of a very ancient city. The foundations and ruins of buildings are washed away by the canal, and appear to mark the site of a city of the Kayanian epoch. The right banks of the Abi Gargar are inhabited by the Gúnduzlú tribe. The main body of the river unites at Bandi Kír with the river of Dizful and the Abi Gargar. Its banks are well wooded, the river is deep, and, I believe, well calculated for navigation. There appears to be no

* Daughter's dam.

interruption from the bridge of Shushter downwards. Shortly after leaving that town, it enters the alluvial soil, in which it continues to its junction with the Shaṭ-el-'Arab and the sea. After the union of the three streams at Bandi Kír, the Kárún becomes a noble river, exceeding in size the Tigris or Euphrates.* Its banks are well wooded, its depth is considerable, its current equal and moderate, and it is in fact a river admirably suited to steam or other navigation. About 13 miles below Bandi Kír, on the left bank of the river, is the village of Waïs, containing about 300 families; and between Waïs and Ahwáz there are two ruined mud forts, now uninhabited. The right bank of the river is usually occupied by the Arab tribe of 'Anáfijah.

A low range of sandstone hills traverses the Kárún at Ahwáz. It is evident that the river has forced a passage through them, and the rocks, which remain in its bed, form the only obstruction in its course from Shushter to the sea. Four ridges of rocks cross the Kárún at Ahwáz: the first, immediately above the castle, and below a large island in the river, has an opening which admits of vessels without any difficulty, and has nine fathoms of water; the second, which traverses the river below the castle, is the most important of the four. It has two openings, through which the river at the dry season rushes with some impetuosity. The chief channel, which is that near the right bank, has about nine fathoms water, and is of considerable breadth. Through it, Lieutenant Selby took the steamer 'Assyria,' and the inhabitants of Ahwáz constantly track large vessels by the same passage. The second channel, which is nearly in the centre of the river, is considerably smaller, but has about the same depth of soundings. This ridge of rocks has been taken advantage of in constructing a band across the river, and the interstices are filled up with massive masonry, much of which now remains. It is not, at the same time, improbable that, as at Shushter, the band was used as the foundation of a bridge. This is the celebrated band of Ahwáz; it is not, however, to be compared with those of a somewhat similar construction at Shushter. The third ridge, not traversing the river, offers no obstacle to the ascent of vessels. The fourth ridge is of the same description.

The river at Ahwáz is between a quarter and half a mile in breadth, and has a continuous channel of above 8 feet deep in the driest season of the year. I believe that the band which causes the chief obstruction in the river at Ahwáz might easily be removed to such an extent as to admit of the passage of steam-vessels, and to diminish the velocity of the current.

Ahwáz is inhabited by Ra'yyats subject to the Cha'b Sheikh,

* And see Macdonald Kinneir (p. 293).

whose Chief is Sheikh Madhkúr. Many of the inhabitants own small bugalabs, which trade between Mohammerah and Shushter, or are used for the transport of merchandise between those places, as the owners themselves do not trade. They also carry Kerbelá pilgrims for a small sum up and down the river. They usually take 3 days in descending, without the aid of sails, from Hasám-ábád to Ahwáz, and between 4 and 6 days from Ahwáz to Mohammerah.

From Ahwáz the river runs S.S.E. to Kút 'Abdu-llah. Ahwáz is placed by Lieutenant Selby in lat. $31^{\circ} 18' 30''$ N., and about 49° E. long. As far as Kút 'Abdu-llah, the river winds but little, but beyond that place, it is very serpentine as far as Ismá'iliyeh. This village, which belongs to the Báwí tribe, is placed by Lieutenant Selby in $30^{\circ} 58'$ N. lat., and $48^{\circ} 46'$ E. long., or 14 miles to the W. of Ahwáz. Seven miles S. by E. from Ismá'iliyeh is the village of Idrisiyeh. Eight miles S.S.W. of Idrisiyeh is Imám 'Alí Husein. Ten miles E. of 'Alí Husein is Rúbein ibn Ya'kúb. Twelve miles to the eastward is the artificial canal, which is drawn from the river Jerráhi and passes through the town of Felláhiyah. The river runs from thence S.E. to the Haffár, about 12 miles distant. From the right and left banks of the river there extends a vast plain, unbroken by a single eminence, and now almost uninhabited and without cultivation. The river running through an alluvial soil is subject to much variation in its bed, but a continuous channel may be found at all times of not less than 2 fathoms in depth. Its banks from about 35 miles above Mohammerah are well wooded, and it is in every respect admirably adapted to steam navigation.*

From the Kárún, below Shushter to the Bahmeh-shír, numerous canals and watercourses have been drawn. These are evidently very ancient works, and some of them, particularly one on the left bank of the river at Kút 'Abdu-llah, of very considerable size. The beds of these canals are now much elevated above the river, even when that stream is highest. They must, therefore, have been supplied with water by artificial means, or the bed of the river must have greatly deepened since their formation. I believe the latter to have been the case, from the nature of the soil through which the Kárún flows. Its course has evidently varied much even in the upper, and it will be seen how much it has altered within these few years in the lower part of the country. The hills which it traverses at Ahwáz are not continuous, but,

* I examined this river in the 'Assyria,' accompanied by Lieut. Selby. That enterprising officer has conferred the most essential benefits upon English trade, and I trust, upon civilization, by his survey of this river, the Bahmeh-Shír, the Kerkhab, and the Hai. These are some of the most interesting and useful results of the Euphrates-expedition

breaking off on the left bank of the river, do not rise again until about 4 or 5 miles beyond its right bank. It is evident that this was a continuous chain, and that a portion of the hills in the interval has been gradually worn away by the action of the waters.

The Kárún discharges itself into the sea by the Khór Bahmeh-Shír, and part of its waters into the Shaṭ-el-'Arab by an artificial cut or canal called the Haffár. Such are, at present, the only outlets of this river. The Bahmeh-Shír is about 40 miles in length, and has a good navigable channel to its junction with the sea of not less than 4 fathoms' depth, being above half a mile in width. Its general course is S.S.E. Its entrance is at low water, during spring tides, more than 3 fathoms deep, and therefore practicable for ships of large burden. Its banks are but little inhabited, as its water, being often mixed by the tides from the Persian Gulf, is generally salt. The canal from the Kárún to the Shaṭ-el-'Arab, now generally called the Haffár, is about 3 miles in length, and receives probably about three-fifths of the waters of the river. It has evidently, since the time of its construction, increased considerably in size, and must, from the nature of the soil, and from the force with which the tide enters the Bahmeh-shír, operating as a check upon the free discharge of the waters of the river by that mouth, be daily enlarged. There is depth of water in this canal for vessels of any burden. On it, is situated the town of Moḥammerah. Its banks, like those of the Shaṭ-el-'Arab, are clothed with palm-groves. The tide ascends in the Kárún for a few miles above Rúbein ibn Ya'kúb.

I have observed that the course of the Kárún, near its discharge into the sea, has undergone considerable changes. Even in the latter half of the last century, it had two mouths; the Khór Kobbán,* and the Khór Bahmeh-Shír. It appears that a Sheikh of the Cha'b Arabs constructed a band or dam across the river near Sáblah, to force the waters of the Kárún into the Kobbán branch. It must be remembered that the Khór Kobbán did not receive the great body of the waters of the Kárún, but its chief mouth was the Bahmeh-shír. The Kobbán branch separated from the river about 15 miles above the Bahmeh-shír.† This dam was destroyed by Kerim Khán during his invasion of the Cha'b territories, and the waters of the Kárún gradually resuming their ancient course, the Kobbán was quite filled up, and even the vestiges of this branch no longer exist. The Kobbán, before its discharge, appears to have been divided into three branches. It may be doubted whether the Kobbán was not, at a

* Vulgarly pronounced Gobbán.

† See Macdonald Kinneir (p. 293).

very early period, the real and only outlet of the Kárún into the sea. It is evident that the Haffár is an artificial cut; its name denotes it.* Now the Kárún was undoubtedly called the Haffár on its separation from the Kobbán branch; and it will be found that the name of Haffár is now applied not only to the 3 miles of the Kárún upon which stands Moḥammerah, but to 14 or 15 miles of the river above the Bahmeh-Shír.

The river of Dizful, which unites with the Kárún at Bandi Kír, has its source in the mountains to the N.W. of Burújird. Its principal, and indeed almost only tributary, unites with it immediately before its entrance into the mountains at the village of Bahrein, in the plain of Burújird; from thence it flows almost due S. to Dizful, receiving a few small mountain torrents on its way, but no stream of any importance. About 5 miles above Dizful it is joined by the Balád-rúd, or more correctly the Bálà-Rúd, "the upper river," an insignificant stream in the summer months, but a most impetuous and dangerous torrent in spring. It receives near this spot, the Súz-āw,† a small stream, which only deserves mention as, like the Sháwúr or Shápúr, it rises from springs gushing out in the plain near Kal'ah Hájí 'Alí. It takes its name (Sabz-āb) from the green colour of its waters. After receiving the Bálà-rúd, the river of Dizful turns sharply to the S.E., and runs generally in that direction till it joins the Kárún.

Its course is, however, as tortuous and serpentine as that of any river with which I am acquainted. Frequently in its windings, it recoils upon itself within a few yards, and then suddenly diverges for some miles. In one instance a bank, little more than 9 feet in breadth, separates the two reaches of the river, which, after a circuitous course of about 10 miles, returns to the same spot. The banks of this river are thickly wooded with the poplar and tamarisk. The brushwood is inhabited by lions and large herds of deer. The tribe of the Āli Kathír Arabs encamp near this river, except at its junction with the Kárún, where its banks are usually occupied by the 'Anáfijah. The Tereif, or Arab buffalo herdsmen, who inhabit the marshes formed by the river, are dependent upon the Āli-Kithír. The Sháwúr or Shápúr, the course of which appears to be very little known,‡ rises near the village of Kal'ah Hájí 'Alí from springs in the plain. In the neighbourhood of this village, it is used for irrigating the lands. Its bed is narrow and deep, and in many places not fordable; the

* It signifies, if rightly spelt, the canal digger, and is not mentioned by the Arabian and Persian geographers.—F. S.

† Súz-āw for Sabz-ab, i. e., green water.—F. S.

‡ According to some maps, this stream joins the Kerkhah; in others, it runs into the Kárún below Ahwáz; others again do not lay it down at all.

stream is sluggish, and the water heavy. Its source is near the Kerkhab, and it flows for some miles in a line almost parallel with that river, to which it approximates at Shúsh, within one mile of the tomb of Daniel. From this spot, it gradually inclines towards the river of Dizful, into which it ultimately falls, about 8 miles in a direct line, but about 12 by the course of the river from the Bandi Kír. It is, however, almost entirely drawn off for irrigation during its course; and in summer, is frequently exhausted by the artificial canals, some miles before its junction with the Dizful river. In winter it divides into two branches below Kúmat, each falling separately into the river of Dizful. The upper or northern branch retains the name of Sháwúr; the lower or southern receives that of Kharúr. At this season of the year the Sháwúr frequently forms small marshes, which are occupied by Arab buffalo-herdsmen, and in summer are used for rice-grounds. Several Arab villages are built upon its banks, the principal of which is Kúmat. Near its junction with the river of Dizful, is the ruined village of Āli Husein. Bands are frequently constructed across the stream for the purposes of irrigation. The lands through which the Sháwúr flows are considered as rich and fertile, particularly those of 'Ajeirub; its banks in the spring are clothed with the most luxurious herbage. On the Sháwúr are the celebrated ruins of Shúsh.* About 25 miles in a direct line from the Bandi Kír, but at a much greater distance by the course of the river of Dizful, is the village of Kal'ah Bender, now uninhabited. The river Kárún is here crossed by a ledge of rocks, in which there is an opening sufficiently large to admit the passage of boats. This remarkable ledge crosses the country like a geological fault. Here it rises to nearly 100 feet above the plain; but it is frequently beneath the level of the surrounding country, as exemplified in the band of Máhi-bázán, which I believe to be a continuation of it. Beyond it, occur the small undulating hills, seldom exceeding 50 feet in height, which traverse the country, and are visible about 7 miles from Shushter, on the Kárún. They are covered with vegetation.

By the successful ascent of the steamer Assyriá, the navigability of these important rivers was established. It may therefore be interesting to give a general outline of this attempt. I had previously, on several occasions, examined these rivers with minuteness, in order to form an opinion as to the advantages they offered for steam navigation; and I had thus acquired an accurate knowledge of the country. We entered the Kárún at Moham-

* This name is frequently written Shús, or Sús, but it is pronounced Shúsh in the province, and also by the inhabitants of Dizful and Shushter. Sús is also admitted to be a correct orthography. It is remarkable that the lands below Shúsh have retained the name of Súsán.

merah on the 9th February, 1842. The river at that time, from violent and continued rains, had risen to an unusual height: the surrounding country was flooded for many miles, and had the appearance of a vast lake. This accumulated body of water rushed down the confined bed of the river with great impetuosity, and meeting the flowing tide at Mohammerah, rose in a succession of formidable waves, and completely prevented the entrance of the water into the Haffár. Through the whirlpool formed by the meeting of these currents, the steamer had much difficulty in forcing her way. In the Haffár and the Kárún, the current was almost equally rapid, but as the water fell daily, so the violence of the stream as rapidly decreased. At this time, of course no obstructions whatever occurred in the river. When the water is high, there are few shoals between Mohammerah and Ahwáz. The principal occur, I believe, shortly above Rúbein ibn Ya'kúb and Ismá'ílyah. Its banks are well wooded: tamarisks are found in abundance. Several positions are well calculated for wood-cutting, and the inhabitants on the banks are willing to cut fuel. The neighbourhood of Idrísíyeh is favourable for the purpose. Notwithstanding the unusual rapidity of the current, we went up from Basrah to Ahwáz in 30 hours.* On reaching this town we found the water had fallen considerably for the two or three previous days; and the land, which had been lately covered, was now again exposed to view. The river had subsided to about its usual level in spring. The two first bands were completely concealed, and we crossed them without any difficulty. The river rushed over many parts of the third or principal band with considerable violence, but flowed through the great opening towards the right bank with an equal stream running about 5 or 5½ miles an hour. Through this opening we endeavoured to pass, but the vessel for some minutes making no progress, it was deemed advisable to take out a hawser to the bank. This having been done, the vessel passed easily through the band, without the assistance of either purchase or windlass. The time employed in taking her through this opening, including the attempt to pass through by the force of steam, did not exceed half an hour; and it is probable that the vessel would have crossed the band without the assistance of any hawser or rope whatsoever. The fourth band was about 8 or 9 feet under water, and we crossed the rocks without difficulty, moved by steam. The river from Ahwáz to Wáís winds considerably. Its banks are wooded. Beyond Wáís the Kárún descends in an uninterrupted reach due N. and S. from the Bandi Kír. The banks between these villages are not wooded.

* The time of cutting wood and other accidental delays are, of course, not included. On ordinary occasions probably, one station between Mohammerah and Ahwáz would be sufficient.

From the Bandi Kír we ascended the main body of the river. Its banks are well wooded with the poplar, but the tamarisk is not of frequent occurrence. It is deep, and easily navigable to within 7 miles of Shushter, where a low range of undulating hills stretches across the country. These hills have proved a natural obstruction to the river, which has gradually worked a bed, but rushes with some violence round their base. A steamer will have a little difficulty in overcoming this fall; native boats always unload below it. The bed of the river is here filled with pebbles washed down from the mountains; the soil, however, on either side, is still alluvial, and the pebbly deposit is not many inches thick. Vessels might with a little difficulty be taken as far as the bridge of Shushter; the current is not at all times rapid, but in summer and autumn the river is shallow, and in many places fordable. Below the fall, however, the Kárún, is at all times easily navigable. On leaving the Kárún we ascended the river of Dizful, which was effected without difficulty as far as the vicinity of Kal'ah Bender. To this point, which may be considered half way to Dizful, I believe the river is at any time navigable. At this season of the year we found 3 fathoms water in this part of its course. The reach below Kal'ah Bender is rather shallow, and the channel difficult. At Kal'ah Bender, there is a large island in the centre of the river, and both branches are traversed by a ledge of rocks. In the right branch there is an opening in the ledge of sufficient size to admit of the passage of a steamer. We succeeded in ascending the river some miles beyond this band. The rapidity of the current, however, increases, and many islands impede the navigation. At the same time a pebbly bottom increases the difficulty of disengaging a vessel which has run aground. The banks, as I have before observed, are admirably wooded. We ascended the Ābi Gargar, or artificial canal; and, as I had expected, found this cut admirably adapted to steam navigation. Its banks are well wooded, and current sluggish. The soundings were generally 3 fathoms, and the canal cannot vary much in depth throughout the year. Native boats usually unload at Hasám Abád, a village between 4 and 5 miles from Shushter, but are sometimes taken through the canal to the town itself. The Ābi Gargar, for about 2 miles above Hasám Abád, is easily navigable. It is then divided into four small branches, through which however the steamer was taken without difficulty. The canal flows through an alluvial plain called Cham Shalaílí. The current is here rapid, and pebbles and broken rocks occur in its bed. We succeeded, however, in reaching the band Máhbázán, beyond which it is impossible for vessels as large as ours to navigate. We were now about 2 miles distant from the town. The banks of the Ābi Gargar are ex-

ceedingly high. This may be accounted for when it is remembered that it falls suddenly at Shushter about 20 feet. Its course is at present serpentine, but its former banks may be traced. The Bandi-Mízán at Shushter having given way, the river deserted its ancient bed, and flowed through the Ābi Gargar. Such was the case when Sir John Macdonald Kinneir visited Khúzistán; and it is probable that from the canal's being then larger than the river, he mistook the Ābi Gargar for the Kárún, although it is difficult to conceive how any person who had examined the entrance of this branch could suppose it to be the natural bed of a stream. The Arabs about Shushter still fall into the same error, and call the Ābi Gargar the Kárún, and the main body of the river Shuṭe'íl, or little stream.* I have never, however, heard the Shushterís or the Lurs thus confound the two streams. When Moḥammed 'Alí Mírzá repaired the band, the river resumed its former course. The names of Chahár Dangah and Dú Dangah,† which the river and the canal received from the relative body of water contained in each, again became applicable to them. However, it may easily be conceived that the large body of water thus suddenly turned into the canal would greatly change its course, and in process of time wear away its banks. Such has been the case, and probably the canal has been at the same time much lowered. Supposing it to have been originally cut to its present depth, it is difficult to conjecture in what manner it could contribute to the irrigation of the surrounding country. Water could only have been raised to the level of its banks by the greatest labour; yet the excavations at Shushter, and particularly the steps leading from the town to the bed of the canal, which are evidently very ancient, are carried to the present level of the Ābi Gargar.

The different qualities of the water of the Kárún, the Ābi Gargar, and the river of Dizful, are shown in a remarkable manner at the place of their junction. The river beyond the Bandi Kír is divided into three parts, each of a different colour, preserving its respective hue for nearly a mile. The waters of the Dizful river are very dark, from the abundance of vegetation on its banks; those of the Kárún are red from the soil over which they pass; while those of the Ābi Gargar are of a milky whiteness. This contrast in the waters of these rivers is perhaps less observable in summer and autumn than during the floods of winter and spring.

It is remarkable that the river of Dizful has no positive name

* Shat signifies properly "that which surmounts," and hence "the bank" of a stream, and "the stream" itself. The term here used is derived from the Shat-el-'Arab, a part of the Euphrates, and signifies little Shat.—F. S.

† Four Parts and Two Parts.—F. S.

in the province. The Arabs usually call it *Shaṭ-el-Diz*, the river of Diz.

The most important ruins with which I am acquainted on the *Kárún*, are those of *Susan*. Major Rawlinson * believed these ruins to mark the site of "Shushan, the Palace,"—*Susa* of the ancient geographers. He did not visit them; and his informants, the *Bakhtiyáris*, of course much exaggerated that which really exists. The description which Major Rawlinson has compiled from their statements is consequently very incorrect.

Súsan is the name of a small valley, surrounded by lofty and precipitous mountains. The river *Kárún* enters it by a deep gorge, and leaves the valley by an equally difficult passage. The ruins belong probably to two distinct epochs—the *Kayanian*, and the *Sasanian*. The right bank of the river, as it enters the valley from the N.E., is covered for nearly two miles by a confused mass of rough stones, unhewn and piled without symmetry one over the other; numerous foundations of the same materials are also discernible. The *Lurs* call these ruins *Málí-Vírán*,† and preserve a tradition as to the existence of a very large and celebrated city in this place. They are probably of the *Sasanian* epoch—certainly not more ancient. Below them, descending the river, the mountains again approach each other, and block up the valley. Paved roads are carried along each bank; they are evidently of great antiquity, and probably coeval with the bridge I shall hereafter describe. The valley again widens, and several artificial mounds rise on both sides of the river. Foundations of brick-work are occasionally exposed by the action of the water. On the right bank, near a small stream, which bursts from the foot of the mountain, and surrounded by lofty trees, is the tomb of *Daniel*. This is the place of pilgrimage held in such veneration by the *Lurs*. But the building is a mean hut constructed of mud, and neither distinguished by white marble, reservoirs, nor sacred fish.‡

During two visits to *Súsan*, I both searched and inquired in vain after inscriptions. I have been informed that there are some sculptures in a cave at a place called *Páí-ráh*, "the foot of the road," but I am inclined to doubt their existence.

Beyond the ruins which I have here described, the river is again confined between tremendous precipices. A paved road is still carried along its banks; and where the rocks recede from the stream there are a few insignificant ruins of roughly-hewn stone,

* 'Journal of the Royal Geographical Society,' ix. 83.

† Pronounced *Mál-vírán*, i. e. "Wealth in ruins."—F. S.

‡ The small stream which washes this tomb, certainly contains fish; but although some have assured me that they are held sacred, I do not believe they are generally esteemed so. They are neither taken care of, nor fed like the fish of *Abraham* at *O'rfah*.

which are sometimes called by the Lurs the Masjdi Suleimán,* and are probably the remains alluded to by Major Rawlinson.† Immediately below them, are the ruins of a very fine bridge. Two buttresses rise from the river—now reduced to a foaming torrent—and two vast masses of brickwork, supported by the opposite mountains, received the arches, all traces of which are now lost. The bricks, of which the whole bridge was constructed, are kiln-burnt, and resemble in every respect those found in ruins of the Kayanian epoch. The arches must have spanned the river at an elevation of at least 100 feet. In the mountains overhanging the left bank of the river—which are called Jiljír, Jilivír, or Chilvír—are the remains of a fort or castle of the Sasanian age. I know of no other ruins at or near Súsan, except such as I have described.

Lurdagán, on one of the tributaries of the Kárún, is believed by the Lurs to occupy the site of the ancient capital of the Bakhtiyári mountains. There is an ancient Tappeh, or artificial mound, near the village.‡

On leaving Súsan, the Kárún approaches Súsan Surkh-Ab (Red-water Súsan), and Andakú, both ancient sites. On the Tallák, which falls into the river below Andakú, are the remains of a city called Boneivár. There are a few Sasanian remains in the vicinity; but the principal ruins are evidently of a much more recent period, and may perhaps be referred to the time of the A'tábegs. The Lurs say that this city was inhabited about 200 years ago, and they pretend that it was the residence of the hostages taken from the Bakhtiyári Chiefs. I have before described the ruins of the Sasanian castle, at the entrance of the Kárún into the plain of 'Akíli.

In that plain there are relics of large canals, and numerous artificial mounds and foundations of buildings, evidently of great antiquity.

In Shushter there are scarcely any remains of a period prior to the Mohammedan conquest. Large excavations in the rock on the right and left banks of the river may perhaps be of a greater antiquity. I do not, of course, include the bands and portions of the bridge, which are undoubtedly of the age to which they are, both by history and tradition, assigned. The castle is altogether a modern building, and, except a few foundations, nothing remains of the ancient edifice. To the south of Shushter, about one mile beyond the gate, there are, however, the remains of a city. Hewn stones, large kiln-burnt bricks, pavements and sepulchral

* Solomon's Mosque.

† L. c., p. 84.

‡ In the Noz-hat-el-Kulúb this place is called Lurdagán, and is said to be celebrated for the excellent quality of its grapes.

vases, glass and pottery, abound. An extensive square, formed by lofty solid mounds, occupies the right bank of the Ābi Gargar. These ruins are evidently of greater antiquity than any of those in Shuster. They are sometimes called by the Shushteris, but of course incorrectly, 'Askari-Mukram.

On the right bank of the Kárún, about 3 miles from Shushter, I found a large mound surrounded by ruins. On the summit of this Tappeh is an Imám-zádeh, dedicated to Róbein* ibn Yaḩúb (Ruben the son of Jacob), which gives its name to the place.

About 7 miles from the junction of the Kárún with the river of Dizful, on the right bank of the former, are the remains of a town of no great extent, belonging to the Sasanian epoch. The mounds are strewn with pottery and glass, and I discovered a well filled with human bones.

The most important ruins, however, in the neighbourhood of Shushter are found at the junction of the Ābi Gargar and Kárún. They occupy both banks of the former, and the left bank of the latter, extending about 3 miles along the canal, and being very nearly 9 miles in circumference. I discovered these ruins on my first visit to Shúshter, when floating down the canal in a native boat. I beheld with surprise the vast foundations and solid masses of brickwork which were exposed in the banks of the canal, where the earth, undermined by the water, has fallen in. Subsequently, on several occasions, I examined them on horseback, but was never able to remain there on account of the danger to which a single horseman would be exposed when in this wild and little frequented part of the country. On arriving at the Bandidi Kír in the steamer, I induced Lieutenant Selby to anchor at the mouth of the Ābi Gargar, and I then explored the ruins minutely. The remains here appear to be of three distinct periods—Kayanian, Sasanian, and Mohammedan. The first may be distinguished by the enormous masses of kiln-burnt bricks, united by a most tenacious cement, of which bitumen is frequently one of the ingredients; the second by the hewn stones which bear in the centre the marks that are observable in the Sasanian ruins of Al ḩadhr, Bisútún, Isfahán, and Istakhr,† and

* For Raubein, or Ráúbein; *au* is commonly pronounced *o* by the Arabs. Few Persians can pronounce *o*, or perceive the difference between *o* and *u*.—F. S.

† It will be remembered that in my visit with Mr. Ainsworth to the ruins of Al ḩadhr (Hatra) we observed a particular mark upon each stone used in the buildings. This peculiarity had already been noticed by Dr. Ross. Much difficulty was experienced in determining the object and origin of these signs. In my subsequent researches in Persia, I discovered similar marks upon blocks of stone used in Sasanian edifices, viz.—at Bisútún, Isfahán, and on the Kárún. At Isfahán, having by chance seen them upon stones employed in the construction of the bridge of Julfah, which had evidently been brought from ancient ruins, I was induced to search for other remains,

by the broken pottery and sepulchral vases. Several Kufic inscriptions and soft blocks of sandstone, carved in the usual intricate style of the early days of Islám, show that the city must have been inhabited and built in part by the Arabs.

The ruins now consist of a vast number of artificial mounds scattered over the face of the country, but no general plan of any particular edifice can be traced. There are solid foundations of stone and brickwork, and subterraneous passages and vaults, together with numerous columns and fragments of sculptured stones. On the left bank of the Ābi Gargar is a mass of brickwork of stupendous proportions. The natives have no name for these ruins.

On the river of Dizful, I found few ruins. Artificial mounds may frequently be observed on its banks, but there are no remains sufficiently extensive to mark the site of a city. At Dizful itself, there are many mounds and the beds of large canals, which are evidently of a Sasanian origin. On the right bank of the river opposite Dizful are a few tappehs, and the remains of foundations called by the natives Rawásh, and about a mile to the north there are some other insignificant ruins called, at times, Antabuls.* The ruins near Dizful and the remains of canals, were pointed out to me by the natives as the site of Jundi-Shápúr. Above the town several large canals are derived from the river, and carried to Sháh-ábád, which is about 2 farsakhs † from Dizful.

The greater part of these canals and kanáts are still in use. There are great numbers of mounds at Sháh-ábád, ‡ but they are generally small. The remains of brickwork, pottery, glass, &c., are found for some miles round the village. The inhabitants of Khúzistán call these ruins Daḳeyánús, § and have many traditions relating to an extensive city, which anciently existed here, and to which is attached the celebrated story of the seven sleepers and their dog. I have never, however, heard them identified with Jundi-Shápúr. The country between the river of Dizful and the Kerkhah appears to have once been densely populated, and detached mounds and ruins abound.

and was fortunate enough to find two beautifully preserved capitals of white marble precisely similar to those at Bisutún, which are usually attributed to Shápúr. Without at present inquiring into the object of these signs,* we may I think conclude that they denote a Sasanian origin when found in edifices; and this conclusion is sufficiently interesting in showing the date of the building of Al Ḥaḍhr, which had previously been liable to much doubt.

* Antæopolis?—F. S.

† Seven miles.

‡ Sháh-ábád (Kingstown).

§ Decianus.—F. S.

* They are perhaps marks used by the builders to show which stones were to be placed together.—F. S.

Between the Bandi Kír and Ahwáz are the remains of several large canals. The ruins of Ahwáz have been too frequently described to require any further notice. I will only observe that remains of two distinct epochs are easily discernible—the Sasanian and the early Mohammedan. Below Ahwáz, except the remains of a few canals, there are no ruins of any consequence.

The Kárún has varied in its course, but these variations appear to be very trifling. The soil being alluvial, is daily washed away, and the river constantly changes its banks; but as it gains in one place, it loses in another; and its general course continues nearly the same. The Kárún and river of Dizful evidently united into one stream about a mile above the Bandi Kír a few years ago; and a large delta of recent deposits stretches out from the ancient banks to the place of their present junction. The original course of the Ābi Gargar, which, according to the Arabian geographers, was carried to the neighbourhood of Ahwáz, is not now to be traced to that place. The long reach which stretches in a direct line from the Bandi Kír to Wáis has much the appearance of having been originally an artificial cut. If such, however, be the case, that ancient bed of the Kárún must be traced, and I am not aware of any such bed being in existence. Below the Bandi Kír, I have not been able to find the remains of the Ābi Gargar to the left of the Kárún; and near Wáis a large canal has been derived from the river for the purposes of irrigation.

There is a tradition in the province that the river of Dizful once fell into the Kerkhah.

The Kerkhah rises in the mountains near Kirmánshah: it has, however, several sources; one of which, and perhaps the principal source, is within a few miles of the springs of the river of Dizful. I have only had an opportunity of examining this river from its entrance into the low country, and therefore confine my remarks to that part of its course. After leaving the great range below Qal'ahí Rizá, it winds for many miles among the low limestone and sandstone hills* running parallel with the lofty mountains of Luristán. It leaves the mountains west of Dizful, within 10 miles of the river which traverses that city. At this spot it is a rapid mountain stream; and at its entrance into the plain, it was formerly crossed by a bridge, the remains of which are called Páí Pul.† Immediately below this bridge, the river is fordable during summer, and this ford is generally used by horsemen. It is, however, difficult, owing to the rapidity of the stream; and caravans generally prefer crossing the river at the I'wání

* The hills washed by the Kerkhah, on its entrance into the plain, are a conglomerate, and evidently a river-deposit. The same thing occurs on the banks of the Kárún, near Shushter.

† Bridge fort.

Kerkhah. On the left bank of the Kerkhah, near this ford, there are the remains of large canals, and many mounds, with fragments of brick, glass and pottery. This was anciently the site of a town, but the remains have not at present any distinct name in the province. About 4 miles to the S.W. of Páí Pul are the ruins of the I'wáni Kerkhah. Here the river divides itself into four branches, and is easily fordable in summer and autumn. The ruins of the I'wáni Kerkhah are situated about half a mile from the banks of the river. They consist of a vast assemblage of mounds, many of them of considerable size, strewed with bricks, pottery and glass. Several columns are also found half buried in the ground; and on the summit of one of the tappehs are the remains of an ancient building evidently of the Sasanian epoch. Below the I'wáni, the banks of the river are thickly wooded, and probably the Kerkhah would here be navigable by vessels of small draught. In its course to Hawízah, it frequently approaches within a few miles of the river of Dizful, which is visible from its banks. I have described the mode in which the Kerkhah was thrown out of its ancient course by the breaking down of the band or dam. The Mo'tamid endeavoured to repair the dam in the early part of the spring of 1842, but, owing to an unusual rise of the waters, he was unsuccessful. The Kerkhah falls into the Shaṭ-el-'Arab, a few miles below Kórnah. I ascended the river in the autumn of 1841; the waters were then at their lowest height; and after advancing by steam for about 10 miles, we found a number of channels of small size through which the vessel could not be taken without much difficulty. It is probable that the river might again be rendered navigable as far as Hawízah, as it formerly was by vessels trading to the Shaṭ-el-'Arab. The water of the Kerkhah, in the upper part of its course, is celebrated for its purity; below Hawízah, it receives much stagnant water from the marshes.

The principal source of the Jerráhi is in the mountains to the N.E. of Behbehán; it does not traverse that town, but winds through the plain at a distance of 4 miles from it. A canal from the river supplies the town and the reservoirs and ditch of the castle. To its junction with the Āb 'A'la, it is called the Kurdistán River. Making its way through a low and narrow range of sand hills, it enters the plain of Rám Hormuz, where it receives, near the village of Qal'ah Sheikh, the Ābi Rámuz,* a large stream formed by the united waters of the Āb 'A'la and Ābi Zard. This stream is called in Kinneir's map the Kooock-

* That Rámuz, now pronounced Rúmuz, has long been used as an abbreviation of Rám Hormuz, appears from the Geography of Ibn Khordádhbih, translated and published by Sir William Ouseley, under the name of Ibn Haukal. Lond. 1820, p. 79. —F. S.

Khan Kend. From whence this name originated I know not;* but it certainly is not at present known in the province.† The Ab 'Ala rises in the mountains of Mungasht, near Kal'at 'Ala,‡ the residence of the chief of the Bahmehis, and from this mud-fort it receives its name. Leaving the high range, it traverses the small and fertile valley of Meï Dáwud.§ On its banks are the ruins of many villages and towns of the Sasanian period. The houses, which are almost without exception vaulted, are constructed of roughly-hewn stone, united by a very tenacious cement.

To the south, near this stream, are ruins called Kal'ah Ábád, Kal'ah Gebr, Tauseng and Silesah. Leaving Meï Dáwud the Ab-'Ala forces its way through the low limestone and gypsum hills running parallel to the great range. In this part of its course it is joined by the Ábi Zard.¶ Near the place of junction are several bitumen-springs. Issuing from the hills, it traverses the plain of Rám Hormuz; and, receiving the name of the Abi-Rámuz, falls into the Kurdistán. The Ábi Zard rises in the mountains of Mungasht, near the village of Malágái. Passing through a difficult gorge, it traverses Abú-l-'Abbás, and enters the small plain of Bághi-Malik. At Abú-l-'Abbás are the ruins of a town of some extent. These remains consist chiefly of roughly-hewn stones, united by cement. In Bághi Malik are the extensive ruins of Manjaník. Major Rawlinson, who received his information respecting them from the Bakhtiyáris, believed them to be both of the Kayanian and Sasanian epochs. He was led into this opinion by the description of an ancient tappeh, and by a singular tradition relating to the patriarch Abraham and to Nimrod, connected with the place.¶ I have carefully examined these places, and have visited them on several occasions. There are certainly no remains anterior to the Sasanian, and the greater part of those now remaining are of a much later period, and may be referred, like many others in these mountains, to the time of the Atábegs. The Sasanian remains consist of numerous vaulted chambers and buildings, in every way similar to those of Kasri Shírin and Shírwán. The mound to which the tradition applies is not artificial, but a portion of a low conglomerate range of hills running parallel to the course of the river. In the plain of Bághi-Malik the Ábi Zard is joined by a small stream, which rises near Kal'ah Tul, or Tul Teibí. This mud-fort, the residence of the

* From Petis de la Croix's Translation of the *Zafar náme*; but the best MSS. have Sharí Khán Kendeh.—F. S.

† I believe there is a mountain stream near Fellát called the Ábi Kurkán, but I am not aware whether it falls into the Kurdistán, or into the Ábi Bors.

‡ I. e. Upper Castle (God's Castle). Kal'at Allah, the name given by Mr. Layard, would probably be considered as profane by Muselmáns.—F. S.

§ David's wine.

¶ Yellow water.

¶ See Major Rawlinson's Notes, l. c. p. 81.

Bakhtiyári chief, is built upon a lofty tappeh,* around which are numerous smaller mounds. Leaving the plain of Bághi Malik, the Ābi Zard forces its way through the precipitous range of limestone and gypsum-hills, and joins the Āb-'Alā. The waters of both these streams, which are fed by the snows of Mungasht, are of the most exquisite transparency, and are celebrated for their purity throughout the country. After receiving the Ābi Rám, the Kúrdistán takes the name of Jerráhi. It now becomes a broad and deep stream, not at any period of the year fordable, and runs between steep and high mud-banks. In this part of its course, it was formerly covered with temporary villages belonging to the Cha'b Sheikh. These were destroyed on the invasion of the Mo'tamid. I have before described the division of the river into canals at Felláhiyeh.

The Nahr Búsi falls into the Khór Músa, and its mouth is included in the chart of the rivers falling into the upper part of the Persian Gulf. The Felláhiyeh Canal, which runs through the town of that name, and joins the Kárún near Sáblah,† is a very ancient canal. It was deepened and repaired a few years ago by the Cha'b Sheikh, and the workmen discovered an ancient anchor embedded in the soil. When the dam exists, it can admit of the passage of boats carrying four kharwárs.‡ When it has been destroyed, larger vessels can ascend. This canal forms the common line of communication between Felláhiyeh and Mohammerah. About 12 miles above Felláhiyah, on the right bank of the river, are the ruins of the old town of Dórák.

The banks of the Kúrdistán are well wooded; but after the junction of the Āb-'Alā, the brushwood ceases.

I am informed that considerable ruins are found on the Kúrdistán§ before its entrance into the plain of Behbehán, about a day's journey in the mountains near Dehi Dasht.¶ From the description I received, I believe them to be Sasanian. After the entrance of this river into the plain, it traverses the ancient Sasanian city of Arján,¶ about 4 miles to the N.E. of Behbehán.** The ruins of a bridge of remarkable construction exist in the stream, and on the banks of the river are several remains of buildings. The country around is covered with bricks, &c. The ruins of the ancient city of Rám Hormuz are about 3 miles from

* On digging into the tappeh for the foundations of the fort, a stone chamber was discovered; in the centre of which was a coffin containing human bones, a sword, helmet, and armour, and several coins of Alexander.

† Properly Sábilah.—F. S.

‡ Ass-loads—7½ lbs. each.—F. S.

§ Called Ab-erghán (i. e., Ābi Erghán, the river of Erghán, or Reján) in the Baron de Bode's map.—*Journal of Geographical Society*, xiii.—F. S.

¶ Plain-ville.

¶ Arrajan, Argán, or Arghán.—F. S.

** In Kinneir's map these ruins are placed to the west of Behbehán.

the river, the waters of which were conveyed through the plain by large canals. The Zohreh, or river of Hindiyán, is formed by the united waters of two large streams, the Ābi Shūr * and Shūrín,† which have their sources in the mountains of the Mamesenni.‡ This junction takes place about 2 farsakhs from the plain of Zeitún, near the celebrated hill fort of Gul and Guláb. § The Zohreh contains a considerable body of water; but, being divided into several branches in the plain of Zeitún, is easily fordable. It traverses a range of small sandstone hills, and falls into the sea a few miles from Hindiyán, to which village it is navigable for vessels of small burden.

That part of Hindiyán which is situated on the right bank of the river, belongs to the Sheikh of the Cha'bs,—that situated on the left, to the Governor of Behbehán.

The Tīb rises in the mountains of Kebír Kúh, from which it issues by a narrow and precipitous tang, or gorge. It then runs through a belt of low hills of conglomerate, among which, on the banks of the river, are ruins, evidently of the Sasanian epoch, consisting of roughly-hewn stones united with cement. They are called by the Lurs "Kalauta." || The bed of the river is here wide, but during summer and autumn almost dry, the water scarcely reaching to a horse's belly. It is confined on both sides by lofty cliffs. Kalauta is three days' journey, about N. 60 W. from Dizful. During the early part of its course, the water of the Tīb is, I am informed, particularly sweet and pure; immediately after quitting the mountains, it becomes brackish and ill-flavoured. Leaving the low hills, it enters the plain of Deh Lurán, and here first receives the name of Tīb, having before been known to the Lurs by that of "Meimá." ¶ After traversing the plain of Deh Luran, it forces its way through a small range of sandstone hills, and enters the spacious plains of 'Arabistán. About four miles from these hills, near the river, is the village of Bayát. Its course is then about S. 30 E. till within about twenty miles of the Tigris, when, turning suddenly, it runs towards the hills, and soon afterwards loses itself in a marsh called by the Arabs Khór Tīb.** This marsh unites with the marsh formed by the Hadd. About eleven miles from the river are the extensive ruins of Tīb, usually called by the Arabs "Shaharích." †† The river evidently traversed this city, and has deserted its ancient

* Salt.

† Sweet or fresh.

‡ Mohammed Huseini, shortened into Mahemetusenni and Mamesenni.—F. S.

§ Rose and rose-water.

|| Kal'ah Atábeg?—F. S.

¶ Wine-water.

** The course of this river appears to have been unknown. It was usually confounded with the Hadd, and was supposed to fall into the Tigris. It will be seen that it has no connexion whatever with the former, except that it falls into the same marsh.

L. Khaur Tīb signifies estuary, or mouth of the Tīb. Tīb means "good."—F. S.

†† Shahrícheh. Little city, in Turkish.—F. S.

bed. There is now no water near the ruins except in reservoirs to the east, which collect the rains in spring, and afford a small supply for the flocks of the Arabs during the remainder of the year. The city itself could not have been supplied by such means; and traditions exist amongst the Arabs that the river once ran through its walls. The ruins consist of large mounds, scattered without regularity, and surrounded by a quadrangular wall. The height of the greatest tappeh may be between 30 and 40 feet. Bricks, pottery, glass and other fragments abound. Beyond the walls there are several groups of mounds. The bricks are both kiln-burnt and sun-dried. I was unable to find any hewn stone; nor did I hear of any sculptures or inscriptions. The country to the E. and N.E. of the Tíb is a perfect desert. I am informed by the Arabs that there are no other ruins on the Tíb except those I have mentioned.

The Duwárfj is formed by two streams rising in the hills usually occupied by the Lur tribe of Sagwand. The western or upper branch is called by the Lurs *Ab Audánán*.* On its banks, soon after leaving the higher hills, are ruins consisting of numerous foundations and fragments of buildings, called *Tal-Yezíd*.† To the north of these there are similar ruins called *Mesháb*. The two streams unite in the lower part of the small plain of *Patak*. In this plain there is a tappeh and several mounds. There is a tradition, both among the Arabs and the Lurs, that this is the site of an ancient city of great extent. The plain of *Patak* is about due north of *Dizful*. The Duwárfj now forces its way through the sandstone hills, and after winding for a few miles in the plain, in which it is joined by a small stream called *Bogreb*, it loses itself, like the Tíb, in a marsh.‡

These are the principal rivers of Khúzistán. Further north, having their sources in the hills of *Luristán*, are the *Changolar*,

* *Ābdánán* in the MS. list of names, and *Āb dānán* or *Āú dānán* are identical, as the Kurds substitute *ú* or *w* for *b*.—F. S.

† *Yezíd's mound*.—F. S.

‡ It will be observed that the greater part of the *Hadd*,* which, in fact, contains nearly half the waters of the *Tigris*, the *Kerkhah*, the *Tib*, and the *Duwárfj*, is lost in a marsh. This is a remarkable fact, and confirms the assertion of the ancient geographers that the *Tigris* and *Kerkhah* formed a lake before they found an outlet into the sea.† There is evidently a considerable depression in the country to the east of the *Tigris*. The bed of that river is perceptibly higher than the Marsh, and a very small portion of the waters of these rivers unite with the *Shaṭ-el-'Arab*. These marshes are yearly increasing. Since the destruction of the band of *Hawizah*, a large tract of country has been placed under water, and when the rains swell the mountain torrents and the larger rivers, almost the whole country between the *Tigris* and the hills, from a line drawn some miles above the *Hadd* to the *Kerkhah*, is one great lake, and uninhabitable. In summer, boats may be taken with ease from the *Hadd* to the *Kerkhah*, about one hundred miles, through the marshes.

* Boundary.

† Pliny, *Hist. Nat.*, lib. vi. c. 26, 31, tom. ii. p. 665, 700, ed. Franz.—F. S.

the river of Bádrāi, and that of Mendalí, with many small streams, or rather mountain torrents, which are dry, or nearly so, in summer, and frequently deep and unfordable in the rainy season. The river of Mendalí is almost entirely absorbed in irrigation near the town, and becomes a very small stream: it passes near the village of Kasáníyah, and unites, I am informed, with the river of Bádrāi below the village of Bágh-sháhi. It was on the banks of this river, Changolar, near the spot where it issues from the hills, that Captain Grant and Mr. Fotheringham were murdered by Kelb 'Alí Khán. The river of Bádrāi is usually known by the name of Kongitún.* It runs through an extensive plain called Kongitún Cham; after traversing the towns of Bádrāi and Jesán, and uniting with the Changolar, it takes the name of Wádí,† and falls into the Tigris below Abú Khanzírah. All these rivers during the summer and autumn contain but a small body of water, and I question whether any portion of it falls into the Tigris. In the winter and spring, however, the Wádí is a considerable stream. There was some difficulty in crossing the river of Bádrāi when I passed through that village in the month of December. On this river is the celebrated mound of Bádrāi—a magnificent Babylonian remain.‡ Between Bádrāi and Mendalí I crossed three small streams—the Ab Kazát (a salt stream), the Ab Tursák, and the Talk Ab, also a salt stream. I am told that they unite with the river of Mendalí. On the Tursák are some small mounds and ruins, which give the name to the river.

As I have before observed, the country rises from the plains in a succession of table-lands. On leaving the shores of the Persian Gulf, an extensive plain is traversed—in winter a swamp, in summer parched by a burning sun. This plain, the upper part of which is Lebrání,§ contains many villages, and produces little grain, except corn and barley. It is bounded to the east, by a range of sandstone hills, the western faces of which are exceedingly precipitous; to the east, however, they are very little above the level of the plain of Zeítún. Zeítún is bounded to the east by another range equally precipitous; to the west, however, they unite almost insensibly with the plain of Behbehán. These are the Zeítún hills. Their sides are furrowed by a thousand torrents, and the roads across them are on the western side very difficult. The plain of Behbehán is a rich alluvial deposit, well suited to general cultivation; in the spring it is clothed with flowers. Beyond the plain of Behbehán rise the lofty peaks of the

* Kongitán, or Kunjidán.—F. S.

† That is to say, it enters the Arabian country.—F. S.

‡ The mound is called 'Aker, (*i. e.* Mound, in Arabic).—F. S.

§ Pronounced Lebrání.—F. S.

great chain. Among these mountains are many small plains and rich valleys, such as Deh Dasht, Tangtakí, Tang Chevil, Tang Solák, &c. Their western is much more precipitous than their eastern face, and the plain of Behbehán is some thousand feet lower than 'Irák or Jebál, the commencement of the great table-land of central Asia.

Ascending from the northern part of the Persian Gulf and the Bahmehshír, we cross the extensive plains occupied by the Cha'b Arabs. As in the plains to the east of the Tigris, there appears to be an evident depression in this land. The country is a very recent deposit. In the winter, from the continued rains, it frequently becomes a vast swamp, and is impracticable for caravans. Here there are no remains to be met with, not even the ruins of ancient canals. In the summer no water is to be found in this arid plain for many miles; and it consequently becomes uninhabitable. The hills which form the western boundary of the plain of Zeítún unite with the Zeítún hills, and stretch across the country in a N.W. direction to the Jerráhi. Near the village of Khalf-ábád there is a remarkable peak, from which issues a continued flame, similar to that of Kerkúk. I passed near this hill, but was unfortunately unable to examine it. The hills interrupted by the Jerráhi soon re-appear, and meet the Kárún at Ahwáz. About five miles beyond the river they again spring up, and disappear within a short distance of the Kerkhah, resuming their course to the west of that river, where they are known to the Arabs by the name of Bandi-Buzurgán;* they then approach the great range, and unite with the first parallel chain of low sandstone and limestone hills at the foot of Kebír Kúh. There they appear to terminate, and certainly are not traceable to the south of Mendálí. Beyond the Zeítún chain is the fertile plain of Rám Hormuz, which extends to the River Kárún from a low range of hills, running at right angles with the great chain joining the Zeítún hills, and forming the boundary between Rám Hormuz and the plain of Behbehán.† The plain of Rám Hormuz has a rich alluvial soil, suited to grain of all kinds, and to rice, fruit-trees, dates, &c. &c. Here are the remains of numerous villages, and frequent assemblages of mounds, and remains of large canals, marking the seat of an overflowing ancient population. To the east of Rám Hormuz is a range of sandstone and limestone hills, abounding in gypsum,‡ and containing the cele-

* *I. e.* hills of the great embankment.

† The name of Rám Hormuz is not, however, applied to the country near the banks of the Kárún, which is usually called the Mázihebén.

‡ Many parts of these hills have distinct names, but the hills themselves, from Behbehán to the Kárún, are always called by the Bakhtiyáris, *Giyách*, and distinguished by the names of places to which they are near, as *Giyáchi-Rámuz*, *Giyáchi-Méi-Déwud*.

brated white naphtha springs and the bitumen pits of Meï Dáwud. Their western face is broken and precipitous. To the east they gradually subside into small plains and valleys. Their forms are frequently picturesque, and they are much more serrated and irregular than the great range. To the south of the Āb 'Alā, and between that river and the plain of Behbehán, they are chiefly tabular. In these hills there are numerous ruins of villages, castles, and mountain strongholds—all of the Sasanian epoch. Crossing them, and following the Āb 'Alā, we enter the rich valley of Meï Dáwud.* Here, as I have observed, are numerous remains of ancient villages, and the country seems to have been once thickly peopled. Ascending the Āb 'Alā, where it is closed in by the mountains of the great chain, we come to the small village of Kalát 'Alā, beyond is the lofty range of Mungasht. Crossing the low hills to the west of Meï Dáwud, we enter the small but fertile plain of Mongenú,† which is situated immediately at the foot of Mungasht. To the N.W. of Mongenú, following the course of a small stream which falls into the Ābi Zard, is the plain of Bághi-Malik. Ascending the Ābi Zard which passes through a narrow gorge formed by the great range, we enter the pleasant valley of Malágáí, thickly wooded with gigantic walnut trees. Beyond it, is the vast barrier of Mungasht. Leaving Bághi-Malik to the N.W., a small ridge of hills, branching from the low limestone chain, is crossed to the plain of Tul. This plain is of a rich alluvial soil, fit for the cultivation of corn and barley. It is bounded to the north by Mungasht, and to the west by a low range of hills dividing it from Hallágán. Returning to Rám Hormuz, and starting from the naphtha-springs, we cross the low hills and enter upon the plain of Taulah, which runs in an almost uninterrupted line to the vicinity of Shushter, receiving, however, various names in different districts. Small ridges frequently branch from the principal chain, and form separations between different pasture-grounds. To the N.W. of Taulah is the small plain of Khár-Shutur-Zár, beyond which is Gulgir.‡

To the N.W. of Gulgir is the small plain of Shakar Āb; beyond which is Lavarí, a rich district abounding in konár trees.§ This plain is divided from that of Beítáwand by a low ridge of sandhills. From the summit of the mountains of Mungasht, this country has the appearance of a vast sea of broken hills. The plains are in general too small to be distinctly distinguished.

* David's wine.

† Mangenán?—F. S.

‡ This name is frequently pronounced Gurgir, which is, I believe, the proper pronunciation.

§ The Jujub; *Zizyphus vulgaris*, *Jujuba*, or *heterogena*. It was called *Coumarus* by the Greeks. (Sprengel, *Gesch. der Botanik*, i. 114.)—F. S.

Beyond this confused mass, the plain of Rām Hormuz appears to stretch in one uninterrupted line to the Shaṭ-el-'Arab. I have seen few prospects more sublime than the view from that elevated position. The hills and plains described contain numerous ruins of villages and towns, all of the same epoch. Few of them are known by any distinct name; and they are generally too insignificant to require particular notice. The buildings, which are of stone united with the usual cement, are all low and vaulted. Leaving Taulah, we cross a small ridge of sandhills, and, traversing a narrow slip of land, reach the limestone hill of Asmārī, which rises considerably above the surrounding country. It is celebrated as the abode of wild animals and game, and is well wooded with the bellūt.* Crossing Asmārī, we descend into a narrow broken valley, which is usually known by the same name as the hill. This is an encamping place for the Chahār Lang tribe of Suhúnī. It is well-known for the number of its ruined villages of the Sasanian period. The Lurs pretend that there are above 300 in this valley alone. Numerous excavations in the rocks also exist, and I am informed that there are sculptures and an inscription near the Sulphur-spring, which rises from the western extremity of Asmārī. However, I very much doubt their existence. Beyond this valley there rises a confused mass of hills wooded with the bellūt. Crossing them to the N.E. we enter the plain of Hallágán. An ancient paved road leads across these hills. Passing through the picturesque valley of Murdefel, and leaving Hallágán by a small tang or gorge, the road enters the plain of Mál Amír. The entrance to this pass was once guarded by two forts of the most solid construction, the remains of which now exist. Around are numerous mounds and foundations marking the site of a town. Near Hallágán are many ruins of a later period, which are assigned by the Lurs to the Atábegs. We have here the Kaláh Atábegán,† where one of those princes is said to have sustained a siege and to have perished; the Cheshmeh Atábegán‡ and the Puli Atábegí.§ The whole of this country abounds with traditions of the Atábegs. The hills which separate Hallágán from Mál Amír are a continuation of a small ridge which runs parallel with the great chain to the N.E. of Kaláh Tul. Mál Amír is perhaps the most remarkable place in the whole of the Bakhtiyári mountains. On all sides the most precipitous mountains rise almost perpendicularly from the plain. To the E. it is divided into two parts, which are separated by a range of limestone hills branching out from Mungasht. Towards its eastern extremity are the ruins of a very ancient city. They consist of

* *Quercus ballota*, or some other species of oak.—F. S.

† Atábeg's Castle.

‡ Atábeg's spring.

§ Atábeg's bridge.

a large tappéh rising upon the summit of a vast irregular mound. This appears to have been the castle, and to have been surrounded by numerous smaller mounds. Foundations of brick are exposed after rain. Near these ruins there are no stones similar to those used in the Sasanian buildings. I do not entertain a doubt that they are of the earliest Kayanian epoch. There is a tradition that this was the site of a most ancient and extensive city, which occupied the whole of the plain, and was the residence of the monarch of the mountains; hence its name of the Prince's House. I have heard many stories of subterraneous passages among the Lurs, and they have wonderful traditions respecting different mounds. Gold and silver coins are frequently found, but I was not sufficiently fortunate to obtain any. They are of course immediately melted down and converted into ornaments. It is said that Hasan Khán, the last chief of the Chahár Lang, found a large treasure here. Sculptures occur in four distinct places in the plain—three are Kayanian and the fourth Sasanian. The most remarkable are those in the Kul Fara'un,* a small tang or gorge to the N. of the ruins. They occupy a recess in the mountains, which appears to have been the site of a building or an altar. The remains of the Kayanian epoch occupy five distinct places. The figures are altogether about 340 in number. The principal group is a bas-relief to the left on entering the gorge, situated high on the face of the mountains, but easily reached. It is a large tablet consisting of ten figures traversed by a long cuneiform inscription in a perfect state of preservation. The principal figure is nearly in the centre, and probably represents a priest. He is clothed in long robes, reaching to his ankles, richly ornamented and edged with a fringe. His beard falls in curls upon his breast, across which his arms are folded. Five lines in the cuneiform character are engraved on a portion of the robes, probably the name and titles of the person represented. Several lines in the same character appear on the lower part of the dress. The face, like that of all the other figures, has been purposely mutilated. This figure is about four feet in height. Behind it are two smaller figures, one above the other, the upper being 1 foot 4 inches, and the lower 1 foot 7 inches in height. The first wears a short tunic, and a loose garment falls from his shoulders to his ankles. In his right hand he holds a bow. The other has an ornamented robe reaching to his ankles, and a girdle encircling his waist. His arms are folded on his breast, as those of the large figure, and his long beard falls in curls. In front of the principal figure are seven smaller figures. Three upper figures have instruments of

* Fara'un is Pharaoh; but what is Kul? Lake?—F. S.

music and wear long robes reaching to their feet, and bound round the waist with a girdle. The first holds a square instrument so much defaced that its nature cannot be determined. The second has also a square stringed instrument, somewhat resembling in shape the Zantúr of the present day. The third carries a harp of a peculiar construction. It has many strings, which are brought down, and, after having been united, again spread out and form a triangle with the base of the instrument. These figures are 1 foot 3 inches in height. Beneath them is represented a man in a short tunic seizing a pázan,* the ibex or mountain goat, with spreading horns. Beneath him are three heads of the mouflon or mountain sheep. Behind them, one above the other, are three animals, probably dead, and turned upon their backs. They appear to represent wild boars, but are much mutilated. This figure is 9 inches in height. Beneath it are three figures 10 inches high. They have tunics descending to the knees, and are offering a sacrifice. Two men are leading an animal, probably a bullock, to a mushroom-shaped altar, over which the third extends his hands and appears to preside. Most of these figures have a small inscription in the cuneiform character upon them, which does not form a part of the long inscription, but perhaps contains the name and station of the person. The principal inscription, which consists of 24 lines in a complicated character, traverses the tablet uninterrupted by the figures, over the draperies of which it is sometimes carried. The whole length of the tablet is 5 feet 6 inches, and the height averages 4 feet. The rock above projects considerably beyond the sculptures, and consequently shelters them from the inclemency of the weather; the inscription has thus been preserved. The design is bold, and the execution good.†

In the gorge, a large triangular block has its faces covered with sculptures. The principal face has a large figure 6 feet 10 inches in height. It has suffered much from long exposure to the weather, and the features are not distinguishable. It probably represents a priest in the attitude of prayer; the hands are elevated. The robe descends to the feet, and a girdle encircles the waist. Behind this figure are four rows of smaller figures, 1 foot 10 inches in height, with hands similarly extended. The first row contains 19, the first of which are somewhat larger than the others. In the second row are 16 figures, and in the third the same number; in the fourth row are 19 figures. Beneath the large figure, I believe there have been four busts, but they

* A Kurd word: Bzn in Garzoni's Vocabolario.—F. S.

† That is to say, when compared with the generality of the ancient Persian sculptures. The works of the Kayanian epoch are usually much superior in style, design, and execution to those of the Sasanian.

are now so much mutilated as to be scarcely distinguishable. In front of the large figure, there are three rows of smaller figures with extended hands. In the first row there are two figures, in the second three, in the third four, of the same height as the smaller figures before described. On the second face, there is a large figure 6 feet 5 inches in height, with its hands joined on the breast. The features, and, indeed, the whole body, are much defaced. In the front there are two rows of small figures similar to those on the first face. The first row contains seven, the second nine. Behind the large figure are three rows of small figures, the first containing 13, the second 14, and the third 18. The third face is entirely occupied by similar small figures disposed in four rows, and fifty-three in number. All these figures have their hands joined and extended as if in the act of prayer. A second detached block in the gorge has one face sculptured with one figure 6 feet 4 inches in height. It is that of an old man with a long beard, and his features are in better preservation than those of the other sculptures. A tunic descends below his knees, and his hands are elevated, but not joined as in the other figures, the forefinger of each hand being extended. His head-dress is peculiar, and appears to resemble that of a figure in the Shikafti Salmán, which I shall hereafter describe. Behind this figure, are four smaller figures 1 foot 3 inches in height. They are carved in a very slight relief, and are almost effaced. They wear long robes, and their arms appear to be joined on their breasts. In front of the large figure are the remains of a figure or sign, but so much effaced that I was unable to determine its nature or object.

In a recess on the side opposite to the tablet first described, and on the face of the rock, there are 113 figures, mostly with their hands elevated, and similar to the small figures above described. In an angle of the rock are five rows of figures. In the top row, a monarch is represented sitting on a throne; above him and by his side are his attendants. They are so much effaced that they can with difficulty be distinguished. In the second row six figures face four others. The first figure of the six appears to have a bow in his hand; some appear to have their hands bound. The third, fourth and fifth rows are nearly similar to the second. The right hand figure of all these rows has the right hand elevated to its face, its elbow being bent at right angles. They are 1 foot 7 inches in height. Below the king are two figures. Near this group is a large figure, much effaced, with its arms extended and hands joined, similar to the large figure in the triangular block already described. On a solitary block at the entrance of the gorge, there is a figure about 7 feet in height ;

its hands are elevated and its fingers pointed upwards. To the right, are nine figures—two 2 feet in height. Beneath the large figure there are four others 2 feet 10 inches in height.

These sculptures are evidently of a very early epoch, and appear to me to be of higher antiquity than any other sculptures of this kind with which I am acquainted in Persia.

On the same side of the plain, to the E., there is a small tablet near a ruined Imám-Zádeh, called Sháh-Suwár. A natural slip in the mountain has left a scarp of great elevation, which the Lurs, believing to be artificial, attribute to the Gabrş. High up from the ground and difficult of access, on the face of this scarp, there is a small bas relief, consisting of six figures, evidently of the Kayanian era. A monarch is seated on a throne, and five prisoners, with their hands bound, stand before him. The figures are about 2 feet in height, and so much effaced by long exposure to the weather that they are now scarcely distinguishable. A place beneath the sculptures was probably once occupied by an inscription, no trace of which however now remains. The Lurs have many traditions relating to this spot, and pretend that an Imám on a black horse once visited this part of the plain, from which circumstance the Imám-Zádeh has received its name. They yearly sacrifice sheep here; and I suspect that the tradition is of a much remoter period than the time of the Imáms.

On the southern side of the plain of Mál Amfr, in a narrow gorge, is an extensive cave.* Within this cave there is a natural recess, on both sides of which are figures. That on the right has a long robe descending to its ankles; its arms appear to have been folded on its breast. The beards descend in curls almost to the breast, and the head-dress resembles that worn by the priests of the Magi. It appears to consist of a cap fitted close to the head, and advancing in a double fold over the forehead. The figure to the left has its arms elevated and its hands joined in the attitude of prayer; a tunic descends to its knees; its head-dress is similar to that of the other figures. Both are considerably above the natural size. The proportions and design are very good.

An inscription, almost perfect, exists to the left of the figure first described: it consists of 36 lines in a complicated cuneiform character. An inscription probably existed to the left of the second figure, but water percolating through the rock has completely effaced it. On the dresses of the figures are also fragments of inscriptions. On the opposite side of the cave, high on the rocks, there are two tablets. The first contains three large

* It will be observed that this account differs entirely from that given by Major Rawlinson, who did not visit the sculptures, but received his information from the Bakhtiýárf.

and two small figures. The first to the left is about half the size of the larger figures. It probably represents a child. Its hands are folded on its breast, and its robes descend to its ankles. The second figure, which is about 4 feet high, is that of an old man with a long beard; his hands are elevated, and his fingers extended, as in the figures described in the Kul Fara'ún. His tunic descends to his knees, and his head-dress consists of a peculiar kind of cap, falling over the ears and advancing over the forehead. The third figure has a similar tunic and head-dress, and its hands are joined above the breast. The fourth, which is of the size of the first, has the arms joined or folded on the breast; a tunic descends to the knees. The fifth probably represents a woman; the right hand is raised and one of its fingers extended; a long robe descends to its feet, and a cap like a bag falls behind the head. The second tablet contains three figures: the first has the arms folded on the breast, a tunic descends to the knees, and the head-dress appears to be similar to that of the small figures in the other tablet. The beard descends in close and well-defined curls upon the breast. The second is that of a child, and is half the size of the others; the arms are folded on the breast, and the tunic descends to the knees. The third is that of a woman, the hands joined and the head-dress similar to that of the female in the first tablet. There appear to be fragments of cuneiform inscriptions on the drapery of the three figures. I was unable to reach them, and consequently could not examine these inscriptions. The figures are above four feet in height. The relief is good and the sculpture bold and well executed.

At the extremity of the gorge are the ruins of an edifice of hewn stone, which appears to have been a fire-temple or an altar. At the entrance of the gorge, there are also ruins of buildings. These remains, however, appear to be Sasanian, while the tablets are unquestionably of the Kayanian era.

To the N. of the plain, towards its western extremity, in a gorge called Hong, I discovered a Sasanian sculpture. It is much inferior in execution to those of the Shikafti-Salmán, or Kul-Fara'ún, and consists of five figures a little under the human size. Four appear to represent Persians of the Sasanian epoch; the fifth is evidently a Roman or a Greek. The principal figure is in the centre, and is larger than the others. It probably represents a Sasanian monarch. His bushy wig, or hair, at once determines the age of the sculpture. A tunic descends to the knees, and broad trowsers fall in folds to the ankles. To the left are three attendants, similarly attired, their hands folded across their breasts. To the right is a warrior on horseback. The dress of this figure and the trappings of the horse are evi-

dently Greco-Roman. The head-dress consists of a scull-cap or small helmet,* from behind which floats a pennant or ribbon. The proportions of the horse are superior to those of the figures, and the design and execution of it appear at the same time to be better. The head is well preserved, and the ornamented bridle and bit are easily traceable. This horseman is advancing towards the centre figure, but appears rather as an equal than a subject or captive. It may therefore be doubted whether it represents the emperor Valerian. Behind the horseman there appears to have been a sixth figure, but it is almost effaced. Indeed the whole tablet is so much mutilated that I had much difficulty in making a rough sketch of it. This sculpture is on a detached mass of rock.

In the plain of Mál Amír there are several Sasanian ruins with remains of small canals and watercourses. This plain is badly irrigated. A few springs rise at the foot of the hills, and a stream of brackish water flows through the midst of the principal group of mounds. The eastern extremity of the plain in the winter and spring is converted into a marsh. Indeed, the whole, after winter rains, is sometimes inundated, as the torrents that rush down the mountain sides have no outlet. There is a small stream running from Mál Amír through a narrow tang to Hallágán, but it is frequently dry. †

On the smallest disturbance in the mountains, this plain is very difficult of access, as it lies on the frontiers of the Dínárúnís. Indeed, at all times, this wild and lawless tribe has rendered this part of the country very insecure. Even when enjoying the protection of Mohammed Taqi Khán, I was plundered in crossing the hills of Jiljird from Mál Amír to Súsan.

A paved high-road was once carried through this plain; I have traced it in several places. A caravanserai in ruins exists at the western extremity of Mál Amír. The next station—for the stations between Shushter and the eastern side of the great chain can still be traced—is at the foot of the mountains near Bors, where there are the ruins of a large caravanserai. The Lurs attribute this road to the Atábegs, but it is evidently a very ancient work.

Crossing the range of mountains called Jiljird, or Chilivir, we find the valley of Súsan, which I have already described. From Mál Amír, these mountains are traversed by three passes, all of

* It resembles that worn by footmen in the middle ages, and probably was, like them, constructed of iron.

† Major Rawlinson has suggested that the bridge of Jirzáil is to be looked for here; * but the defile is too narrow and the torrent too insignificant to have needed so stupendous a structure as that bridge appears to have been. There are, moreover, no such remains in the Tang, as those described by Major Rawlinson.

which are most precipitous and difficult. To the E. of Súsan is the lofty mountain of Tauwah Dóverah, where I am informed there are sculptures, but I believe their existence to be doubtful.

To the E. of Tauwah Dóverah is Bors, which is behind the great range of Mungasht.

Returning to the plain of Rám Hormuz towards the western extremity, which is usually called the Mázehbenán, we find the continuation of the low hills, which run parallel to the great chain from Behbehán, and terminate in the hills near Shushter. Here, however, they are of greater elevation than at the N.E. extremity of Rám Hormuz, and frequently rise into peaks of considerable height, such as Tal Khayyát.* These hills are only to be crossed by very difficult footpaths, scarcely practicable for horsemen. To the E. of this chain we have the plain of Gurgir, in which are the ruins of an ancient Sasanian city. To the N.E. of Gurgir is the plain of Beítáwand. To the N.E. of Beítáwand is another branch of the gypsum hills, which, leaving the principal range near Gurgir, unites with the hills of Shushter near 'Aqílí. Crossing these hills, which are usually known by the name of Turkí Diz,† we come to a small plain abounding with the konár (jujube tree), in which are the ruins called Masjidi Suleimán. The description given by Major Rawlinson of these ruins‡ from the accounts of the Lurs, greatly excited my curiosity. They occur in a very wild district, and having made several unsuccessful attempts to reach them, I took advantage of the deserted state of the country, on my return to the mountains in the autumn of 1841, to visit them. I had frequently heard of an inscription, which the Lurs described as of great length, and as engraved on a block of marble. I found, however, that no such inscription exists; and that the ruins, though probably of a remote epoch, are really very insignificant. They consist of a lofty platform, on the summit of which are the foundations and ruins of a building. Several broad and spacious flights of steps, built of large and roughly hewn stones, lead to them. The steps are still in good preservation, although the stones have not been united with cement. Such are the ruins of the Masjid Suleimán. It is remarkable, however, that there are no remains in the province of Khúzistán to which so many traditions attach, as those respecting this mosque of Solomon. I have never conversed with the Bakh-tiyáris on the subject without hearing the most singular stories, in which the names of Solomon, 'Alí, Rustam and Shápúr, are jumbled together in an extraordinary manner. To the S. of the Masjid there are ruins evidently Sasanian in a valley called

* Tailor's mount.—F. S.

† Turkish Fort.—F. S.

‡ 'Geograph. Journal,' ix. 80, 81. Major R. must have been greatly misinformed as to the position of the ruins, as well as with respect to their character.

Kalga. Near Kalga are bitumen-pits. To the N. of the Masjid is a small valley called Āb Garmáyeh and Chesmeh 'Alí. To the N.E. the country is most mountainous, scarcely inhabited, and extending to the river Kárún. To the N.N.E. of Shushter is Kúh Fedelák, a continuation of the same low limestone range. Through these mountains, the river forces its way into the plain, leaving the hills. To the W. of the Kárún, this chain abruptly ends in a limestone hill overhanging the town; beyond it, is the extensive plain between Shushter and Dizful. To the N.E. of Kúh Fedelák is the fertile plain of 'Aqílí, with a rich alluvial soil, about 10 miles in breadth, which I have described elsewhere, to the N.E. of which, we find the low sandstone hills, a continuation of the Turkí Diz. Beyond them, and at the foot of the higher limestone range, is Jungerí, where there are the ruins of a village and, as I am informed, an inscription and sculptures.* Crossing the limestone range, we come to the Kárún, beyond which is a vast plain, stretching to the hills of Ahwáz and Hawízah. Due N. there is a low hill, forming, as I have before observed, the termination of the Kúh Fedelák. Beyond it, is a plain divided from 'Aqílí by the Kárún, on the right bank of which we have Jallakán, about 8 miles from Shushter, and 12 from Gotwand. Two miles to the N. of Gotwand, where the river issues from the hills, is the continuation of the great chain. Beyond it, there is an uninterrupted series of mountains to Zardah Kúh. Before entering the plain, the Kárún comes from S. 80° E. To the N. of Kal'ah Rustam, it is joined by a small salt stream, along the banks of which for a short distance, runs the road to Diz Mallákán and Isfahán. The hills to the N.E. contain many Kishláks of the Dúrakís and Beïdarwand I'liyáts. They are usually known as the Giyách, each portion, and indeed every valley and ravine, having a peculiar name. Proceeding N.E. we descend into a narrow ravine formed by the Zíveh Āb, a small stream, frequently, however, swelling into a rapid and impassable torrent. Ascending precipitous hills, we come to Lólí, a small plain. Beyond it, in the same direction, a large stream, Súr or Shuwer Āb, falls into the Kárún. Low hills separate this river from the pleasant valley of Darahí Sháh.† To the S.E. of Darahí Sháh is the Diz of Ja'fer Kulí Khán, of which I have already given a description. Darahí Sháh is separated from the valley of the Diz, by a steep range of hills called Haftráhán Kúh,‡ and the

* I have received an account of an inscription here from persons on whom I can rely, and I therefore believe that it does really exist; but, as I have before observed, little dependence can be placed upon information received from Lurs. From the description I have received, I believe the inscription to be in the cuneiform character.

† King's vale. Darah, or Dereh, is rather a Turkish than a Persian word; but many of the Kurds speak Turkish.—F. S.

‡ Seven-roads mountain.—F. S.

river Tallák. To the S. of the Diz is Kúh Serí; to the N. Kúh 'Odeín and Kúh Girwah. To the N. of the Diz, about 3 miles distant, are the ruins of Bonawár. To the N.E. we have the plain of Andakú. There is a tradition among the Lurs that a city once stood in this plain.* Still continuing in a N.E. direction, we pass through the tang or defile of Shillá, and ascend the lofty and precipitous mountain of Dallán. Beyond them is the small and interesting plain of Shimbár. To the N.W. the continuation of Kúh Dallán is called Monár. The plain of Shimbár is nearly of a triangular shape, about 4 miles in breadth from N. to S., and about the same from E. to W. It is a rich alluvial deposit, washed down from the declivities of the mountains which rise precipitously to a stupendous height on all sides, almost perpendicularly from the plain. It can easily be imagined that a place of this description would be soon converted into a lake or marsh, unless an outlet were formed for the water, which in winter and spring descends in torrents from the surrounding mountains. There is a tradition that Shembár was, in fact, a lake, and that Filómars, aware of the security of this position and of the richness of the land, determined to cut through the mountain and drain the plain. The channel was accordingly commenced at the southern extreme angle, where the mountains suddenly subside, and are comparatively low. It is sometimes carried completely through the hill, and sometimes forms a subterraneous passage, about 20 feet in height, and almost the same in breadth, and one quarter of a mile in length.† The Lurs call the place Puli-Nigin (the bridge of the ring), and have many traditions relating to it, repeating the following distich in the Bakhtiyári dialect:—

“ Ar yekí iporsí aval zédaurún,
 Filómars ser kuchir sardár Gaurún.
 Ar yekí iporsí aval Negiwánd
 Šad hezár khanjar țelá beróvar úi stánd.”

Which may be thus translated:—

“ Should any one ask about (the wonders) around
 (Answer) Filómars, with the small head, the leaders of the Infidels.
 Should any one inquire about Negiwánd,
 (Answer) one hundred thousand (men with) golden daggers stood
 before him.”

Or the distich is sometimes thus varied:—

“ Negín kih beburd daurún be daurún,
 Filómars ser kuchir sardar Gaurún.
 Šad hezár khanjar țelá beróvar úi stád
 Be'amal neh kih az ráhyesh neyoftád.”

* Andaca?

† This excavation resembles much that at Suweidiyah (Seleucia), near Antioch.

"Who cut Negín around and around?"

Filómars with the small head, the leader of the Infidels.

One hundred thousand (men with) golden daggers stood before him,
Lest he should fall from his path."

This distich, it appears, has an allusion to a remarkable peculiarity in the person of this Filómars, who is called the Sardár, or commander of the Gaurs* or infidels. As the tradition, and even the distich, is probably of great antiquity, it may not be uninteresting to endeavour to trace its origin.

To the N. of Puli-Negín, but on the W. side of the plain, is a gorge called Tangi-Botán, or Idols' Gorge. These idols are twelve figures in a large tablet, and one in a smaller tablet, all of the Sasanian epoch. They are situated almost at the summit of a lofty mountain, and are most difficult to reach. No one unacquainted with the place could possibly discover them; and they might have remained unknown for ages had not a hunter, a few years ago, accidentally discovered them when in pursuit of game. These sculptures are placed in a small recess, concealed on all sides by precipices. The rock has been scarped to a considerable depth. The figures are much mutilated, and I found it impossible to take a sketch of them. Nine figures in the large tablet are 6 feet high, and three are 2 feet 3 inches. The first to the left, on facing the sculptures, holds in his left hand a club or sword; his right arm is bent at right angles to his side; he has the Sasanian head-dress, and the ornament which is usually seen in the sculptures of the period adorns his head.† The second figure, which probably represents a female, as its gown descends to the ankles, has its right arm extended, with its hand resting on the shoulders of the first. Its head has also an ornament, which is attached to that of the first. Between the two figures are five letters, which, having been very roughly and imperfectly engraved, are now almost effaced. I could with some difficulty distinguish a few letters approaching to the following forms, which however are sufficiently defined to identify them with the Zend or Pehleví‡ characters:—

* Or Gabrs—Jaur is the modern Greek corruption of the Turkish Gaur (pronounced Jyaur). The Greeks of the Archipelago substitute *j* for *g*, and *ch* for *k*, in imitation of the Italians. Jaur is the Arabian substitute for the Persian Gaur or Gabr, a fire-worshipper, a follower of Zoroaster.—F. S.

† It consists of a waving ribbon, or streamer, thus—



and occurs in the sculptures of Táki-Bostán.

‡ I trust that these letters will afford me some clue to the persons represented in this tablet.

is bent at right angles with its side. A robe descends to its ankles.

The plain of Shimbár is of a rich alluvial deposit. The thicket there is at present so dense that it is difficult to pass through it. It is the abode of numerous bears and boars, and abounds with pomegranates, fig-trees, and vines. The tendrils of the latter entwine round lofty trees, and during a certain season of the year, the I'liyáts collect a large supply of fruit. The Lurs pretend that these trees grew in a garden belonging to a city built in the plain, and as they are not found wild in the mountains, there may be some truth in the tradition.

Remains of foundations and buildings are visible in several parts of the plain. They appear to be Sasanian. The Lurs assured me that there was a long inscription near the Puli Negin, but I was unable to discover it; yet, after my return from the place, they still persisted in affirming that there was a large block covered with characters which had escaped my notice.

To the N. of Shimbár is Lalar Kotek, a lofty mountain, where there is a village, near which, I am informed, a sculpture was found about two years ago. To the N.E. of Lalar is Chillán. To the N. and E. of Chillán is the lofty and precipitous mountain of Keínú, from whence you descend into Bázuft, a well-wooded plain, abounding in the ruins of Sasanian villages. Bázuft is divided from the districts of Chahár Maháll and Isfahán by the Zardah-Kúh * and Kúhi Rang, † in which are the sources of the Kárún.

Returning to the place where the Kárún issues from the mountains into the plains, we find to the N. the celebrated Diz of Mendizán (Miyán-dizán), ‡ behind which, rises the lofty peak of Salenj, and the peaks of Dareh-zard § and Sagniyán. Between them and the plain is the hilly district of Ser-Dasht. ||

The plain between Shushter and Dizful has a rich alluvial soil, well suited to the growth of corn and barley. It is not, however, at present supplied with water. The remains of ancient canals and kanáts exist, and numerous tappehs mark the sites of villages and towns. The whole country was once evidently under cultivation.

Shushter bears about S. 53 E. from Dizful. Two farsakhs or 7 miles from the latter town is the village of Sháhábád, ¶ around which is a confused mass of low mounds covered with bricks, pottery, and other fragments. The principal group of them is enclosed within quadrangular lines of lower mounds, above one mile in length, and half a mile in breadth. Near Sháhábád are the villages of Shalgeyí and Sekomansí.

* Yellow Mount.

‡ Yellow vale.

† Colour-mountain.

|| Head of the Plain.

‡ Mid. Castles.

¶ Kingston.

About midway between Shushter and Dizful is the village of Kúnak.

About 4 farsakhs * from Shushter, nearly W., is Deh Naw, † a village near which is a very remarkable tappeh of great age.

To the W. of Kúnak is a very large and remarkable tappeh called Chaghámish. It appears to have been constructed entirely of mud, nor could I find there any bricks, stones, or pottery.

I have not visited the country to the N.E. of Dizful, nor in that direction traced the course of the river running by that city. Near the point where the river leaves the mountains is the celebrated Diz or hill-fort of Sháhí ‡. Hence the river is frequently called by the Arabs Shaṭ-el-Diz.

The neighbourhood of Dizful is well inhabited, and the plain between the river and the Kerkhah abounds in villages. Here the indigo which is manufactured in Khúzistán is raised, and orange and lemon trees find a most favourable soil.

The villages of Bonowár, Bonowár-Názir, Túk, Kal'ah-Názir, Kal'ah Háji-'Alí, to the right of the river, and those of 'Abbás-ábád, Zibeh, and Záwiyah, to the left, are celebrated for their gardens and rich arable land.

Having thus described the country inhabited by the Bakh-tiyáris, I will mention the places where there are ruins, inscriptions and sculptures, of which I received detailed accounts from the Lurs, but had no opportunity of visiting them.

Tuwah Dóverah.—Here sculptures and inscriptions are said to be found, but the existence of them is doubtful.

Asmárí, sculptures and inscriptions.

Near Kal'ah 'Alá there is a cavern called 'Amád Bil containing sculptures, which, from the descriptions I received, I judge to be Sasanian. Others have, I believe, been found in these mountains. There is no part of the country more difficult to visit; and any attempt to reach those sculptures without being well protected, would, I am persuaded, be attended with the greatest danger. I was well acquainted with the Chief of the Bahmehís, in whose territories they are situated; but unfortunately, although frequently in their immediate vicinity, I never had an opportunity of visiting them. The Bahmehís, Chiefs and all, are a most treacherous and cruel tribe.

Tang-tá-Solák, near Bihbahan, sculptures, Sasanian.

Serbúní, near Meī Dáwud, inscriptions, doubtful.

Kal'at 'Arabán, near Rám-Hormuz, inscriptions, doubtful.

Masjid and Kal'ah Garah, near Tal Khayyát, inscriptions, doubtful.

Junjerí, above 'Akílí, inscriptions.

* Fourteen miles.

† New ville.

‡ Royal.

Lalar Koteh, inscriptions and sculptures.

Puli-Negín, an inscription, doubtful.

Pái-ráh, near Súsan, sculptures, doubtful.

The Hamrín hills appear to terminate to the N. of Mendalí. From that town to the Tigris there is an uninterrupted plain. The hills which stretch from Mendalí, in a S.E. direction till they unite with Kebír Kúh, are a portion of the great limestone chain. Parallel with Kebír Kúh, and indeed forming almost a portion of those mountains, are the low serrated sandstone hills, a continuation of the small range before described. They end, however, abruptly with Kebír Kúh, at the plain of Masen-áú (Mohsen-ábád), or continue in very slight undulations to the river of Bádrái, where all traces of them cease.

Between Bádrái and Mendalí, a distance of 35 miles, the country is perfectly level. It is inhabited by wandering parties of the Bení Lám, and caravans and travellers are frequently exposed to much danger. About 8 miles S. 20 W. of Bádrái is the large village of Jesán, and 4 miles N. 80 E. that of Zerbátíyeh. Bádrái, Jesán and Zerbátíyeh have celebrated date-groves, and the soil is favourable for the growth of orange and lemon trees. The land produces grain of various kinds, cotton and hemp; but the country is so frequently exposed to the depredations of the Arabs that its inhabitants engage little in its cultivation. Between Bádrái and the Kebír Kúh is the plain of Masen Áú, in which is the ruined mud fort of Seífi, formerly belonging to the Chief of the Feílís. This tribe, however, now seldom descends into the plains, which are occupied by the Bení Lám Arabs. The low undulations to the S.W. of the plain of Masen Áú and Kongítán Áú are considered as the boundaries between the Persian and the Turkish dominions. The river Tigris approaches within 20 miles of the Kebír Kúh, and from the summits of the mountain I traced its windings through a vast extent of country. The Kebír Kúh, which is visible from the river, is frequently called the Hamrín Hills by those unacquainted with the country. I need not, however, remark that these two ranges have no connexion whatever with each other, and are indeed of a totally distinct geological formation. I have also heard it frequently asserted that the hills of Ahwáz are a continuation of the Hamrín chain. It will be seen, however, from the preceding remarks, that such is not the case. They are certainly nearly of the same formation, and all the hills and mountains in this part of the globe have a general course to the E.; but as the name of Hamrín appears to be nearly local, it cannot with more propriety be applied to the hills of Ahwáz than that of Rawánduz would be to Mungasht, of which it is in fact a continuation.

The mountain called Kebír Kúh * is one of the most lofty and imposing of the whole range. It is interspersed with many pleasant valleys, and well supplied with springs of pure water. The greater part of the limestone of which it is composed is very fossiliferous.

Between these hills and the Tigris, in the lower part of its course, there is, as I have before observed, a vast marsh, to the N.E. of which we have the low sandstone range, through which flows the Tíb and the Duwárij. To the N.E. of these hills is the plain of Patak, divided to the S.E. by a low ridge from the extensive plain of Dasht-'Abbás, in which there are many ancient mounds. This plain is again divided to the S.E. by slightly undulating ground, from that of I'wáni Kerkhah.†

These plains are all bounded to the N.E. by a low but very precipitous range of limestone and conglomerate hills, through which flows the river Kerkhah. The whole of this country is now uninhabited, except by a few wandering Arabs of the tribe of Bení Lám. Many traditions, however, exist in the province as to its ancient prosperity and the number of its cities. I succeeded under the most favourable circumstances, though not without running much risk, in examining the country between the Kerkhah, Bádarái, and Mendalí, but I should earnestly warn any European against endeavouring to explore these interesting districts without having the best protection, as I am persuaded that any attempt to do so would be attended with the greatest danger. Even in company with a caravan, an European should be well disguised, and careful in concealing any instruments or suspicious articles which he might have in his possession. I should recommend travellers wishing to reach Dizful from Baghdád through this country, to proceed first to Bádarái, and remain there till they could fall in with horsemen belonging to the Wálí, 'Alí Khán, returning to their tents, or could send to that Chief and obtain his protection. If favourably received by the Wálí, and able to reach his residence, they would probably not find much difficulty in continuing their journey to Dizful, accompanied by *at least three horsemen* belonging to that Chief. I do not think that less than three horsemen would be sufficient after passing the 'Amalah, or particular tribe of 'Alí Khán. By all means let the tribe of Sagwand be avoided, and let the traveller keep as much as possible among the low hills inhabited by the Dínárwand, never trusting to a Sheikh of the Bení Lám, as his protection would be of very little value, and there is scarcely ever a Chief who is acknowledged by all their tribes at the same time, and would respect a protection afforded to an European.

* Great mountain.

† The Pavilion of Kerkhah.

It may perhaps be useful to add a few more hints for travellers in this province.

Among the Āli Kethír* and 'Anáfjah tribes, there is little danger of being plundered, and the country which they inhabit may be traversed with safety, unless the tribe be at war. It must, moreover, be observed that the traveller is exposed to attacks from plundering parties of the Bení Lám and Borowí, who frequently make invasions into the country of those tribes. Between Shushter and Dizful, it is better to travel in winter with a caravan. In the Bakhtiyári mountains protection from a Chief will only avail in his own proper tribe, and will not influence the Chief of another. Frequently, indeed, the contrary is the case, and a traveller will be subjected to many annoyances, and perhaps much danger, in venturing from the residence of one Chief to that of his rival.

The Kúh-gelúyeh tribes, as well as the Mamesennis, are not to be trusted.

The Cha'bs will probably offer no opposition to the traveller, but the Bâwis are notoriously treacherous.

The Dîfán and Sîlah-sîlah tribes of the Feílís cannot be trusted, and even the protection of their Chiefs is of very little value.

I do not think that a traveller would run any risk in visiting either 'Alí Khán, Ahmed Khán, or Haider Khán. Major Rawlinson, however, has expressed a different opinion.

The ruins of Şeimarrah, or Sirwán, may be reached without difficulty during the summer months through 'Alí Khán, or Ahmed Khán, or the local governor of Luristán.

The road between Shushter and Behbehán may generally be followed with safety in company with a caravan.

It is not prudent to enter the Bakhtiyári mountains without first receiving the protection of the Chief through whose territories you wish to pass. Frequently a sufficient introduction may be obtained from the Chiefs of Shushter, with whom the Bakhtiyári chiefs are generally in correspondence.

The tribe of Haft Lang is less to be trusted than the Chabár Lang, and the Dinárúnís are not to be trusted at all.

A traveller who wishes to visit the mountains should have no baggage whatever, or any article that may excite the cupidity of those among whom he hopes to reside.

Remarks on the Ancient Geography of Susiana.

As I am unprovided with the authorities necessary for the elucidation of the very complicated questions involved in the comparative geography of this province, I will confine myself for

* Tribe or family of Kethír: Al is here, a noun, and not the article.—F. S.

the present, to a few remarks upon the theory adopted by Major Rawlinson in his 'Memoir of a March from Zoháb to Khúzistán.'*

Major Rawlinson, in order to reconcile the conflicting statements of the ancient geographers, has assumed that there were two cities of the name of Susan or Susa, in the province of Susiana; that the Kárún is the Eulæus; the river of Dizful, the Coprates; the Kerkhah, the Choaspes; the Ābi-Zard, and its continuation, the Jerráhi, the Hedyphon, or Hedypnus; and the united arms of the Kárún and Dizful rivers, the real Pasitigris. The continual changes which have taken place during the last century in the course of the various rivers of Khúzistán, near their junction with the Shaṭ-al-'Arab and the Persian Gulf, are sufficient to prove the difficulty of arriving at any satisfactory conclusions from the accounts given by the historians of Alexander of the entrance of Nearchus into the province of Susiana. Dr. Vincent has mainly founded his arguments in the identification of the rivers of Susiana, upon Arrian's description of the position of their mouths. The changes which they have undergone even since the publication of Dr. Vincent's work, will sufficiently show the fallacy of this basis, and will serve to explain the errors into which its learned author has consequently fallen. Ptolemy mentions the Mosæus as the first river in Susiana. The only satisfactory way of fixing its position is by assuming that the name applied to one of the mouths or Khórs of the Kárún, which is still retained in the modern name of Khór Músa.† After the Mosæus, Ptolemy places the Eulæus, then the Oroatis. The rivers which actually flow into the northern part of the Persian Gulf are, besides the Euphrates, the Kárún, the Jerráhi, and the Zohreh, or river of Hindiyán. The last has been generally assumed to be the Oroatis. If, then, the Kárún were supposed to be the Eulæus and Pasitigris, the Jerráhi would have no representative in the lower part of its course, unless it be the Hedyphon, and unless it formerly joined the Eulæus, as was the case according to Strabo and Pliny—a supposition which the present state of the country renders not altogether improbable. The statement of Arrian‡ that Nearchus ascended the Pasitigris to Susa, and that Alexander descended from that city to the Persian Gulf by the Eulæus, leads to the conclusion that both names were applied to the same river. The canal by which Alexander sent a part of his fleet into the river

* 'Journal of the Royal Geographical Society,' vol. ix. 26—116.

† This, which is Arabic, and therefore modern, signifies "the estuary of Moses," and may have had no connexion whatever with the ancient name Mosæus. Arguments built on such weak foundations (and such are most of Dr. Vincent's) are of very small value.—F. S.

‡ Arriani Indica, § 42, p. 357. Ed. Gronov. De Exped. Alex. L. vii. § 7, p. 282.—F. S.

Euphrates, was derived from the Eulæus. That canal is undoubtedly the modern Háffár; consequently the name of Eulæus is here applied to the Kárún. Therefore, in order to reconcile the statements of Arrian, we must either assume that the name of Pasitigris was also applied to the Kárún, or to a distinct river to the east of the Kárún, although connected in some way with it. The Jerráhf might then be pointed out as the Pasitigris, united with the Eulæus by the canal, now called the Felláhfyah, which is believed to be a very ancient work. But this supposition does not agree with the best authorities, nor with the statement of Diodorus, that the Pasitigris was from 3 to 4 stadia broad, and of a corresponding depth; a description which can only suit the river Kárún. I therefore conclude that the names of Pasitigris and Eulæus were applied to the same river, and that the Jerráhf must be the Hedyphon. It remains to be determined whether the name of Eulæus was applied to the Kárún above its junction with the river of Dizful. Professor Long ('*Journal of the Geograph. Soc.*, v. xii., p. 105) believes the Shápúr to have been the Eulæus. This supposition appears to agree with the statement of Diodorus (B. 19, C. 18), that when Antigonos arrived on the west bank of the Coprates, Eumenes was to the east of the Pasitigris, and that Eumenes recrossed the Pasitigris, and defeated Antigonos, who retreated to Badaca,* on the Eulæus. It is, therefore, to be inferred that the name Eulæus here applies to some river to the west of the Coprates, either to the Shápúr or to the Kerkhah. Although several ancient geographers have evidently applied the name of Eulæus, as well as that of Choaspes to the Kerkhah, it is evident, from the best authorities, that they were distinct rivers. The Eulæus, according to Pliny, rises in Media. The Shápúr is a small stream suddenly emerging from the plain to the west of Dizful. We must, therefore, either conclude that Diodorus has committed a positive error in calling the river to which Antigonos retired the Eulæus, or that more than one river was known by the same name. The only way of reconciling these difficulties is by assuming with Mr. Long that the Shápúr is the Eulæus, and that the united waters of the Shapúr, the Kárún, and the river of Dizful, were also known by that name, as well as by the name of Pasitigris. This will explain the assertion of Ptolemy (B. 6, C. 3), that the river Eulæus had two sources—one in Media, and one in Susiana; that is to say, that one of its branches, the Coprates, rose in Media—and that another, the river of Shushter, rose in the mountains of Susiana.

The conflicting statements of various ancient historians and geographers as to the position of Susa may perhaps be explained

* L. xix. cap. 19.

by its vicinity to the three rivers—the Kerkhah, the Shápúr, and the river of Dizful—each of which may be seen from the ruins of the city. It may also be mentioned in corroboration of this supposition, that the lands on the eastern bank of the Kerkhah still retain the name of Súsan. Alexander is said by Quintus Curtius (v. 3) to have marched from Susa to the Pasitigris in four days. This would agree with the distance between Susa on the Eulæus and the Kárún, by the high road leading from that city to the eastern provinces of Persia.

There cannot, I think, be any doubt as to the position of Susa. The principal ruins are on the banks of the Shápúr; but supposing the accounts of the grandeur of Susa, furnished by the ancient historians, to be without great exaggeration, the city itself, or its suburbs, may well have extended to the two rivers on either side.

The eastern branch of the Kárún, the river of Shushter, will, however, remain without a name, unless we presume that it was called the Pasitigris from its source, as Strabo says (B. 15, p. 729) that after the Choaspes come the Coprates and Pasitigris.

The only evidence advanced by Major Rawlinson in support of his opinion, that the river of Shushter is the Eulæus, is the existence of ruins called Súsan, in the Bakhtiyári Mountains. In order to remove the difficulty, as to the position of the Susa of Darius, he presumes that there were two cities of that name: the one, and the more ancient, the Shushan of the Scriptures, the Susa of Greek *Mythology*, on the Kárún and in the mountains of Susiana; the other, the city mentioned by the historians of Alexander on the Shápúr in the plains of Susiana. I see no good reason for making this distinction. As I have observed in a former part of these notes, there are no remains at Súsan to indicate the existence of a great city of the Kayanian epoch: while the ruins at Shúsh or Susa correspond in many respects with the descriptions given by ancient historians, and indicate the site of a city little inferior to Babylon itself. The river Shápúr does actually lave the base of the great mound, and Daniel from the palace could have heard the voice which issued from the river. Major Rawlinson assumes that the expression "Shushan the Palace," used by Daniel (viii. 2), indicates a distinction between two cities: but surely so disputable an inference cannot be admitted as an argument of any weight.

The only fact of any importance that remains to be considered is the existence of a tomb of Daniel at Súsan, in the Bakhtiyári mountains. No argument can be founded upon the comparative ages of the tombs at Shúsh and Súsan, as they are both modern buildings. The tradition among the Lurs, that Daniel was buried at Súsan, may be favourable to Major Rawlinson's supposition; but it must be observed that the traditions preserved by the ear-

liest Christians, which still exist among the Sabæans and the Jews, point to the tomb on the river Shápúr, as the real burial-place of the Prophet.*

The Sabæans divide the Kerkhab, which they believe to be a sacred stream, into three parts, one of which is called "Akhrokh 'Alaithá," "the *Upper* Kerkhab." The similarity of this word with the name used in Daniel, "Ulaï,"† might perhaps be used as an argument in favour of the identity of the Eulæus and the Kerkhab.

It will of course be borne in mind that the course of the Shápúr has varied greatly, and that the river formerly joined the Kárún below Bandi-Kír.

The only remaining river of Susiana to be identified would be the Oroatis, which, from the statement of Pliny, that it divided Elymais from Persia Proper, we shall have no difficulty in recognising as the Hindiyán river, which actually separates in part of its course the modern provinces of Fárs and Khúzistán.

I will now endeavour to identify the sites of a few cities mentioned by western and oriental geographers.

Seleucia was one of the principal cities of Elymais. According to Strabo,‡ it was called Soloce, and was situated on the Hedyphon. Major Rawlinson believed the site of this city to be marked by the ruins of Manjaník on the Ābi Zard. There are no ruins, however, at Manjaník of an earlier than the Sasanian epoch. On the Āb 'Ala, which is a larger tributary to the Jerráhi than the Ābi Zard, there are several ancient sites and mounds: some on the left bank of the river have retained the name of Sileisah.§

Patak, between the sources of the Dawárij, has been pointed out as the site of Badaca, but the assertion of Diodorus, that that city was upon the Eulæus, is in direct opposition to this supposition. There are no ruins at Patak of sufficient size to mark the site of a large city.

The extensive ruins at Mál Amír are of considerable importance. They may be those of Sosirate; and it is here that we may look for the site of those great temples which, having by their wealth excited the cupidity of the Greek conquerors, were finally despoiled by Antiochus the Great. The sculptures and inscriptions of a sacred character, which abound in the neighbouring

* See also the remarkable inscribed stone of which Mr. Walpole has given a plate from Colonel Monteith's drawing in 'Travels in Various Countries of the East,' ii. p. 426.—F. S.

† See 'Allá above (Dan. vi. 3) (L.) 'Allá, which is almost identical with the Arabic, 'Ala, has probably no relation to U'laï (Dan. viii. 2), which has not the same radical letters, but is nearly identical with the Greek Eulæus.—F. S.

‡ xvi. p. 744. Strabo says "previously," i. e. before the Greeks took it.—F. S.

§ If rightly written, this would bear only a very slight resemblance to Soloké, or Seleukia.—F. S.

mountains, and have been partly described in these notes, prove that this city was a seat of Magian worship. I trace also in Mál-Amír the site of the Sasanian city of Aīdij, which is mentioned in the Murāsid-el-Ittīlā' as a large city, the capital of the district bearing that name, and as situated in a mountainous country between Isfahán and Ahwáz. In the Mo'jem-el-Buldán, Aīdij is described as a city and district between Khúzistán and Isfahán under an independent King. It is said to have no other water for irrigation than rain. Its bridge, called the Bridge of Jirzád, was one of the wonders of the world. It had a celebrated Pyræum, or fire-temple; and sculptures within two farsakhs, called Suwár. This description corresponds exactly with the plain of Mál-Amír. The ruins on the Kárún, below Súsan, are probably the remains of the Bridge of Jirzád; and the name of Suwár may perhaps still be traced in that of Sháh-Suwár given by the Lurs, to the sculptures at the western extremity of the plain.

The Sasanian city of Arján * has already been identified with the ruins upon the river Kurdistán to the E. of the city of Behbehán. The remains of the celebrated Bridge of Dekkán † are still found near the river.

The sculptures in the Tangi-Solák evidently denote the site of a fire-temple, and it is probable that near this spot stood the great Magian place of worship, Mariyán, which is described by Jaiháńí as situated on the confines of Fárs and Khúzistán.

The ruins of Rám Hormuz, a city built by Hormuz, son of Shápúr, may still be traced round the modern village, which bears the same name. According to the Mo'jem-el-Buldán, Rám Hormuz was built by Anúshírawán.

Near the present town of Shushter, there are ruins of an earlier epoch than the Sasanian, but I have hitherto been unable to recognise in them the site of any ancient city. The attempt to identify Shushter with Susa has, I presume, been abandoned. The canals and other works of the Sasanian kings existing near that city have been very accurately described by Major Rawlinson.

I have discovered and fixed with accuracy the position of the city of 'Askeri-Mukram, one of the most celebrated settlements of the Arab conquerors. It was built, according to the author of the Mo'jem-el-Buldán, upon the site of the ancient Persian city of Rustam-Kowádh, and according to the Noz-hatu-l-Kulúb, was also called Burji-Shápúr; according to Jaiháńí, Ardeshr and Masrúqán. The ruins of the city which now occupy each

* Arreján, Reján, or Arghán. Jihán-numá, p. 271.

† Beecar in Mr. Layard's MS., but Yekán, "unique," in a MS. of the Noz-hatu-l-Kulúb.—F. S.

bank of the Abi Gargar, near the Bandi-Kír, have been particularly described in a former part of these notes.

I believe the ruins at Sháh-ábád to have been correctly identified by Major Rawlinson with the city of Jundi Shápúr, called by the Syrians Beít-Lapet.*

At Dizful there are remains which evidently indicate the site of an ancient city, and I recognise in this spot the position of the castle of Lethe, or of Oblivion, in which Shápúr confined the Armenian monarch, Arsaces II. In Chamchán's 'History of Armenia' this castle is called Hanúsh or Onúsh, which in the Armenian language means oblivion, and according to Pusant, a bishop of the fourth century referred to by that author, Hunt-mesh or Huntmush,† which word is said to have the same signification as Hanúsh. In the Murásid-el-Ittilá, and in the Mo'jem-el-Buldán, Dizful is called Andá-l-misk.‡

The ruins of I'wáni-Kerkhah are evidently the remains of the Sasanian city of Kerkh, and of Karkha-Ledan, a bishopric of the early Christians. According to the Syriac authorities quoted by Assemáni, Karkha-Ledan was an episcopal city of the Huzites,§ under the metropolitan of the Elamites. It is called Kerkhah-Khúzistání in the Mo'jem-el-Buldán.

According to the Noz-hatu-l-Kulúb, Kawízah was built by Shápúr-Zú-l-aktáf, but no remains exist near the modern city to warrant a supposition of so early an origin. In the Mo'jem-el-Buldán, it is said to have been founded by Debis-ibn-Ráidh-el Asadí. ||

I discovered the ruins of the very ancient city of Týb in the year 1842. Their position corresponds accurately with the distances and description given by the eastern geographers. According to the Mo'jem-el-Buldán, Týb was a city belonging to the Nabathæans, also called Sabæans, whose language was spoken by its inhabitants. It was said to have been founded by Seth, the son of Adam! and was situated between Khúzistán or Ahwáz and Wásit. By Ibn Haúkal, Týb is placed at the distance of two days' journey from Shúsh. The Sabæans and other inhabitants of the district preserve numerous traditions to prove the extreme antiquity of the city.

* In the Noz-hatu-l-Kulúb it is stated that Ardeshír Bábegán placed Jundi Shápúr on both sides of the river, and to connect the different parts of the city together, built a bridge of thirty-two arches, 520 paces in length, and 15 in breadth, calling it Puli-Andá-l-misk [Abundance of Musk, the ancient name of Dizful]. Jundi Shápúr appears, therefore, to have been confounded with Dizful.

† Compare the Turkish words "unutmak," to forget; "unutmish," forgotten.

‡ Major Rawlinson has placed this castle in the valley of Súsan, but, as it appears to me, without sufficient authority.

§ Khúzis, i. e. People of Khúzistán.—F. S.

|| This chief must not be confounded with one of the same name who built the city of Hillah, in the time of Táýí-lí-llah, the 'Abbási Caliph (A.D. 974—991).

The site of the ancient city of Beït-Daráyá,* which, according to its name, was built by one of its later kings of the Kayanian dynasty, is still marked by a vast mound near the modern village of Bádráï, a corruption of its former name. This city was also called by the Syrians, Daïro-kúni, and by the Arabs Dórkená. It contained a celebrated monastery belonging to the early Nestorian church. It was the usual burial-place of the archbishops of Seleucia, and with Beït-Ksáyá, or Báksáyá,† formed an episcopal see.

The name of Beït Ksáyá may be traced in that of the village of Bághsáyeh or Bágh-Sháhi (an evident corruption of the ancient name), which is situated to the south of Bádráï. Both these towns are mentioned in the Murásid-el-Ittilá.

There are many other sites in the country described in these notes, which might be identified with cities and towns mentioned by the eastern and western geographers. I am compelled, however, to confine myself for the present to the mention of the most remarkable places which I have visited.

* Bádaráyá; Assemání. Bibl. Orient., iv. 726.—F.S.

† Assemání. Bibl. Orient. iv. 729.—F.S.

No. 1.—TABLE OF THE FEĪLĪ LURS.

Great Divisions.	Tribes.	Sub-Divisions.	Families in Tribes.	Families in Division.	Summer Residence.	Winter Residence.	Assessment of Division.
Pish Kūh . .	Dilfān . .	Kākāwand, Yiveliwand, Mūmināwand, Reisāwand, Bijināwand Chauwāri	15,000	5,000	Khāwāh	Hullān, Hullān Dojālī, and Kūh Dasht, Rūdāb, Chārdawer, Terhān.	40,000 tómāns.
	Sfah-sfah . .	Hasanāwand, Kūllwand, Yūsufāwand.	10,000	. . .	Hārāsīm Khāwāh	Jādar, Seimarrāh, Pashti Kūh.	
	Bālā Gīriwā . .	Resnū or Resh- nuwī, Sāki, Pāpi, Dirikawand.	6,000	35,000	Tāf nr. Khorramābād, Abistān and Sar Hurū, Kūhi Haftād Pahlū.	Kīr A'band plain of Lur, Kerki Māngerrāh and plain of Resā.	
	'Amalah . .	Kūshki, Ziwahdsr, Umrāi, Mīr-ākhār, Kākinjī, Gholām, Mo'timad, Rukhrūkh, Zūlah, Chigomf.	2,000	. . .	Khorram-ābād, Terhān and	Seimarrāh, Kūh-dasht.	

Pushiti-Küh	Kurd . . .	4,000	. . .	Kebir Küh, and sometimes Seimarrak,	Abdânû, Deh Lurân, Hills above Bâdrâi, and at the foot of Kebir Küh.	15,000
Zargubî,						
Mâstpi (2),						
Mamûs (2),						
Bâpirâwand (2),						
Kotb-ol-dîn,						
Nôrzah-wand,						
Ibrâhîm-Husein,						
Ahmed-Jâshî,						
Gareki,						
Musîferâwand,						
Duhtî (2),						
Yûsufwand (2),						
Latîfâwand,						
Khalîl-Ibrâhîm,						
Nazîr 'Alî,						
Gowalû,						
Bedevî,						
Cham-kabûd,						
Mâmulaki,						
Meimâhî,						
Shahrîyârwand,						
Dûst-'Alîwand,						
Dârah-Belôf,						
Bûldwî,						
Bâtûlî,						
Haverî,						
Sandâl,						
Murâd-'Alî-						
wand,						
Haider-wand,						
Bozgefr,						
Kharbuzânî,						
Hâk-'Alî,						
Nôker-'Omarân,						
Abdânû,						
Deh-Lurân,						
Bayâl,						

TABLE OF THE FÉLÍ LURS—*continued.*

Great Divisions.	Tribes.	Sub-Divisions.	Families in Tribes.	Families in Division.	Summer Residence.	Winter Residence.	Assessment of Division.
Pushati-Kúh. (<i>continued</i>)	Mehakí . .	Arkiyási, Zarandúshí, Khazál, Risáwand, Bádráí, Bálí, Deh-Báláí, Gúmár, Mál-kirábí, Mishkás, 'Alí-Beikí, (&c., &c.)	5,000	10,000	The Mountains to the N.W. of Kébir Kúh, and sometimes near Khorram-Ábád	The plains at the foot of these mountains.	15,000
	Shahán Panj Sitún Díarwand Lort Handeméní	. . . . . . . . . .	400 200 200 150 150		Id.	Id.	
Dependencies	Bájlán Beiránwand	Dálwand, Sagwand, 'Alíwand, Dáshíwand.	900 1,100 1,500 1,000		Hurú.	Dasht 'Abbás, banks of the Kerkhab, in the low hills, and near the sources of the Duwárij.	2,000
	Hulílání	'Osmánawand, Jalálawand, Dájjíwand, Bálawand, Sarkhámerí.	500 500 200 100 200	6,000	Hills near Hulílán.	Plain of Hulílán.	3,500

Great Divisions.	Tribes.	Sub-Divisions.	Families of Tribes.	Families of Great Divisions.	Summer Residence.	Winter Residence.	Assessment of Great Divisions.
Haft Lang . .	Dúrkaí . . .	Seráswand, Asiawand, Báwádí, (Bábá Hádf) A'liwar, Gallab, Gáshah, Sallák, Bá Hamedí, Ráki, Mári, Kandáli, Malmalí, Berjuwí, Salachín, Sheiní. Xlí Ládiwand, Beliwand, Mashmerdáí, Takki, Uahnáyi, Gandáyi, Makomrayí, Kiyúzi, Xlí-Jemáli, Lerózeni, Málh-sapátán, 'Aq'li, Jiverán, Sohráb, Mónjezi, Sheikh,	4,000		Chahár-Maháll, and part of Bázuft.	Ser Dushí and Diz-Sháhi.	20 mules, or at the present rate, 2400 tó-mána.
	Bakhtiyáriwand or Beidárwand.		3,000	.	Chahár Maháll and part of Bázuft.	Sáasán-Sorkh-Íb, Andaká, Shimbár, and Lóli.	20 mules, or 2400 tó-mána.

TABLE of the BAKHTIYÁRÍ LURS—continued.

Great Divisions.	Tribes.	Sub-Divisions.	Families of Tribes.	Families of Great Divisions.	Summer Residence.	Winter Residence.	Assessment of Great Divisions.
Haft Lang . . . (continued)	Bakhtiyárwand (continued)	Dínóshí, Gashíúí (Kashíúí), Bídmálí (Ibráhmí 'Alí), . . .	1,200	.	Mountains near Tel- át and Semfrán. Near Gilpáigán and Khánsár. Ferídún, part of Já- pálák and Bázuft, Zardah-Kúh, and mountains of Mun- gashí.	Near the seacoast to the N. of Báshehr. Jápálák and Sílá- khár. Halláigán and Plain of Tul.	6 mules, or 720 tómnás.
	U'akí, Mál-Ahmedí. Salák . . .	. . .	2,000	.			
	Kiyunúrí . . .	Mohammed Ja'ferí, Pápá-Ja'ferí, Pásinah-kól, Áriwand, Arkól, Berún, Burburún, Asísáúí, Sheikb, Tembi, Kárwand, Isiagi.	1,000	10,200			
	Suhúní . . .	Vernahamí, Bowersát or Bersák, Kojah (Khawájah), Shúngí, Talhawand, Matark, Hamulab, Keyab, Zumatern, Jóberiz, Ganj 'Alíwand. Múshwí, Hurúní,	1,500	.	Bázuft and Zardah- Kúh.	Gulgír, Asmárí, Shimbár and An- dakó.	10 mules, or 1200 tó- máns.
Chahár Lang . . .	Mahmúd Sálíh		1,000	.	Cheshel Cheshmeh and Ferídún.	Mendezán, and hills above the plain	6 mules, or 720 tómnás.

Múguwí . . .	Bazás, Jangyí, Mús'awand, &c. Bájál, Báwalshemahí, or Bahmeshahí, Shírazí, Tmáí, Duwá, Salákehíwáh, A'lbáshí, Ghazá, Borogúí, Madiwar, Múí, Charm, Tál, Maderán Maderání, Ketmas, Shiyáí, Sowádkó, Gholám, I'vesí, Áshí, Khalí, Husámí, Terdéní. Abdálwand, Zarchegumí, Zálakí, Búsák, Bósi, 'Isáwand, Bá Is-hák, Sharafwand, Minjáwí, Basmáyí, Sáki.	1,000	. . .	Feridún, and near Buróijrd.	between Shúshter and Dizfál, Part Kal'ahí Tul, and part near Buróijrd.	6 mules, or 720 tómaná.
Memíwand and Zálakí.		7,000	. . .	Generally encamp with the tribe of Mahmúd Sháh.		12 mules, or 2400 tó- mána.
Jamálí . . .		500				

TABLE of the BAKHTIYÁRÍ LURS—*continued.*

Great Divisions.	Tribes.	Sub-Divisions.	Families of Tribes.	Families of Great Divisions.	Summer Residence.	Winter Residence.	Assessment of Great Divisions.
Dependencies .	Dinárúní . .	'Alí Mohammedí (2), 'Aúrek, 'Lejní-aurek, Shálí (Shamló), Serkuló (Ser-kalf), Sehid (Shehid f), Goruwi, Sheikh 'Aliwand, Nórúzi, Bówáyí, Kurkur.	6,000	. .	Towah Doverah, and other mountains above Súan, and sometimes Bázuft.	Súan and Mál Amír.	20 mules, or 2400 tó-máns.
	Jánnikí Garmesír	<i>Large Tribes.</i> Zungenah, Mombeni, Makiyáwand, Korzangenah, Ból'awási (Abbá-l'Abbási, <i>Small Tribes.</i> Servistání, Kiyúpi, Maláqáyi, Telári, Karah-báqbí, Mei Dáwudi, Gareserí, Tembí, Gurgerí, Beig-deli.	5,000	. .	These tribes are chiefly Deh-Nishins, and do not migrate: a few encamp, during the summer, in the mountains of Mungahit. They reside in Bighi Malek, Mei Dáwud, Maláqá, and near Kál'ahi Tul.		2500 tó-máns.
	Jánnikí Sardesír	Jalíli, 'Aúrek, Yár-ahmedí, Mongí,	3,000	. .	Gandemán and Lurdagan, and the neighbouring mountains.	Bori, and near the southern branch of the Kárún and Lurdagán.	800 tó-máns.

	Bārsī, Rīgī, Māngarmuwī Ārmandī, Būjerī, Būnī, Shiyāzī, Referī, Mesennī(Mamesennī?) Hellusadī, Sherūnī, Sātebī, Dāderāyī, Melāsī, Asherī, Sīrawān, Ālī Yeshālī, Ālī Kalū (2), Feilī, Arab-O'ghlī, Mosayyerī, Agējūnī, Cham-komār, Khalājī, Amirjānī, Afshār, Lak.	Gūnduzlū . . .	15,000 . . .	Banks of the Ābi-Gar- gar, and plain of Mosibent.	Village of Bolfēnī, Beitāwand, Turkī- Diz, Mosibent, &c.	1574 tōmāns.
Rābdār, Korrahī, Beitāwand. Bīndūnī	These tribes are Ra'yats of the Gūnduzlū, and included in that tribe.	A tribe scattered amongst the Bakhtiyārīs, said to contain 600 or 700 families. Three small semi-Arab tribes, mixing with the Subhōnī and Jānnikī Garmesār: em- ployed in keeping buffaloes.	
Shīrāzī, Tarefī, Sandallī.	300			

(The Kātīr or mule was formerly valued at 100 tōmāns: it has been latterly raised to 120 tōmāns.)

II. — *Narrative of Mr. William Cooper Thomson's Journey from Sierra Leone to Tímbo, Capital of Fútah Jállo, in Western Africa.* Communicated by LORD STANLEY.

MR. WM. COOPER THOMSON, linguist to the Church Missionary Society at Sierra Leone, was sent by the governor of that colony on a mission to the Imám or Sovereign of Fútah Jállo, a large tract occupied by the Fúláhs or Fullas, lying in the hills about 400 miles N.E. of that settlement. The principal object of this mission was to open a road for a regular line of traffic through that country between the colony and the negro states on the Jálíbé or Niger. As Mr. Thomson had resided for some time at Sierra Leone, engaged in studying the native languages and assisting in translations of the Scriptures for the use of the missionaries, he was in many respects peculiarly well qualified for the service to which he was appointed. To considerable talents and some acquaintance with various branches of knowledge, he added great zeal, perseverance, and courage, tempered by much forbearance and patience under very irritating and trying circumstances.

Some of those feuds which are the constant scourge of the small negro states near the coast, prevented Mr. Thomson from proceeding by the most direct route to Fútah Jállo; he therefore went by sea to the mouth of the Malagiya or Melakúrí River, and thence to the town bearing that name, the chief of which was on friendly terms with the colony. But even at the outset of his journey his progress was impeded by the mutual jealousies and narrow views of the petty chiefs who are masters of the coast, and who, from a desire of monopolizing the traffic, are very unwilling to allow of any direct intercourse between the European nations and the people of the interior. His firmness, however, and determination to overcome more than ordinary obstacles, enabled him at length to reach Tímbo, the capital of Fútah Jállo. His reception there was favourable; but the authority of the Imám, whose sovereignty is rather spiritual than temporal, is so restricted by the power of the other chiefs, who were both unwilling to promote the trade between Sierra Leone and the countries to the east, and desirous to retain so profitable a guest, that fresh difficulties were continually thrown in his way, which kept him a sort of prisoner in Fútah Jállo, till a civil contest arose, which occasioned the deposition of the Imám with whom he was sent to negotiate. The new Imám, however, treated Mr. Thomson with marked distinction, and he appeared to be on the point of obtaining an escort eastward, when a draught of fresh milk drunk while he was much heated by a long walk, caused a violent attack of bilious fever, which carried him off after a few

days' illness, on the 26th of November, 1843. The difficulties overcome and privations endured by Mr. Thomson were such as few travellers have experienced. During his residence in Fútah Jállo for nearly two years, he had the misfortune to lose one of his children and his wife, who remained in the colony. His other son, then about twelve years old, accompanied him, and, after his friends at Sierra Leone had been for several months in anxious expectation of further intelligence from his father, returned in good health, bringing the account of his father's death, and being the bearer of his papers, for the use of which the Society is indebted to her Majesty's Government.

Mr. Thomson, having set sail from Sierra Leone in the forenoon of Thursday the 23rd of December, 1841, arrived, after a tedious passage from baffling winds, at Mr. Weston's factory at Mahala,* about half-past 4 in the morning of the 24th. Here he was kindly received by Mr. Lucas, the gentleman in charge, who gave him a letter for Mr. Ward, Mr. Weston's agent at Melakúrí. At 3 in the afternoon he left Mahala, and though wind and tide were both favourable, was not able to reach Malagiya till 6 on the following morning. He then fell in with Kalli Modu, who having gone to Mr. Shaw's factory, instead of proceeding to Mr. Weston's, had passed him in the night. They landed together, and in the town met Morri Laháí,† with several of his people, returning from the mosque. He welcomed them with seeming cordiality, conducted them to his own quarter of the town, and assigned to each of them a separate house. After stating the object of their visit, and being told that a meeting would take place the next day in order to consider of it, they retired to their respective lodgings. On getting up about two hours afterwards, Mr. Thomson was a good deal mortified to learn from Sannasí‡ that Kalli Modu had just had a second interview with their host, and that he feared serious obstacles would be thrown in their way, as the Chiefs of Malagiya felt themselves slighted by the Governor's having projected and sent a mission to the interior through their country, without first consulting them, or even apprising them of his intention.

26th.—About 1 o'clock on the following day, hearing that the chiefs were beginning to assemble, Mr. Thomson got ready the presents set apart for Bamba Mama Laháí, or Morri Laháí as he is briefly called, and repaired to the meeting, anticipating opposition, but by no means prepared for the decided hostility to the views of the colonial government which he afterwards experienced. The conduct of Kalli Modu had already raised his suspicions

* Mahallah†

† A corruption of the Arabic word *Al-háǧǧ*, i. e. the Pilgrim. —F. S.

‡ A Mandingo, Mr. Thomson's interpreter.

that he and his family wished to engross the entire direction of, and possess an absolute control over, the political and commercial intercourse between the colony and the neighbouring nations, if he could by any possibility extend his influence so far. This suspicion gained strength from his conduct at the meeting. Morri Labáñ and his assembled chiefs welcomed him with much apparent cordiality, as is usually the case, whatever opposition may afterwards be disclosed. The chiefs professed to be offended at the Governor's having sent a mission into the interior without previously apprising them of his intention, and Mr. Thomson soon discovered that Kalli Modu, who had engaged to introduce him to the head men of the neighbouring and superior town of Melikúrí, had become a party to an intrigue designed to prevent his progress. They endeavoured, in the first instance, to detain him at Malagiya till another of their endless palavers had taken place. A pressing invitation, however, from Mohammedu, Keletigi (chief warrior), and Lamina* Yansáni, the head men of Melikúrí, having been received by Mr. Thomson, he proceeded to that place on Monday the 27th. It is only about an hour's passage above Malagiya. There also he received a very friendly welcome; but two of his Malagiya friends made their appearance at the palaver, and on the following day he found, to his great mortification, that he should be detained there six days, till instructions could be received from Alifa,† the sovereign of that part of the country, who was then at some distance in the interior.

29th.—On the subsequent day, Mr. Thomson, by rousing the jealousy entertained by his present hosts of any interference on the part of their neighbours at Malagiya, succeeded in defeating a scheme formed for his detention at that place till they could send him back to the colony; and, on the last day of the year, a messenger from Alifa arrived with the announcement of the speedy arrival of a deputation of chiefs and bearers to escort him up the country.

In the mean time, Mr. Thomson, availing himself of the good offices of one of the merchants who had a factory at Tettuka, on the coast near the mouth of the river, and about 6 or 7 hours' sail from Melikúrí, accompanied that gentleman thither, got his astronomical instruments adjusted, and received some requisite supplies of ammunition and other necessities.

Alifa's three chiefs, sent to escort Mr. Thomson on his road to their master, arrived on the 3rd of January, 1842; but it soon appeared that in trustworthiness they were, if possible, worse than the rulers of Malagiya and Melikúrí. They immediately entered into the schemes already devised to drive the envoy back by inti-

* El-Amin (Arab.).

† Khalífah, "Vicegerent" (Arab.).

midation, and get possession of his property; and it was not till the 8th day of that month that, by the aid of the Keletigi and his son Ansumána (*Ošmán*), and on paying beforehand a most exorbitant price, he was able to obtain carriers, and quit a place where he had experienced such vexatious delay, and had to combat such universal and persevering intrigues.

"We were thus at last," he says, "enabled to start; and the order of march was as follows:—Louis Monaquais* and my son in front, followed by two Sierra Leone men armed with muskets, Louis carrying a fowling-piece and the sextant and quadrant; after them two Súlimas followed by two Melakúri men; then two Sierra Leone men with cutlasses; next two Súlimas and two Melakúri men followed by two Sierra Leone men armed with muskets, and so on, to the rear, which, being usually the object of attack, was brought up by myself and Sannasí, preceded by two Sierra Leone men with firelocks. I mixed the people in this manner to prevent their running off with the loads into the bush, as well as to prevent them from uniting to overpower and disarm our colony people, as has been done more than once in this country to our traders. Our people, in addition to their loads, carried either muskets or cutlasses, and their own little bundles above all; yet they made no grumbling as to the weight, as the natives did. We had only reached the middle of the town, however, when the four Súlimas† again threw down their loads, demanding that the loads of two of them should be divided afresh, or at least reduced, and the other two, who carried a box, refused to carry it any farther. Two of our Sierra Leone boys, however, cheerfully consented to exchange loads with the two latter, and others took a portion of the loads previously borne by the former, so that we once more got into the line of march. We were thus at last enabled to leave this den of treachery. The old Keletigi, who accompanied us to the river-side, on parting, put into my hand his own staff as a sort of passport, and gave myself and my son a long and affectionate benediction, promising to pray day and night for us and our safe return. The Sierra Leone people residing at that place, also, who had accompanied us so far, took leave of us with many blessings, each of them putting into my son's hand some trifling present of oranges, tamarinds, or country bread, &c., and it will be months ere we meet such kind looks as we have left behind us. Ansumána insisted on carrying me over the river, and accompanied us for about a mile and a half to our first

* An old French negro from Gorée, long employed as a sailor, brought to Mr. Thomson by Ansumána, and, as it afterwards appeared, the only one of his attendants upon whose fidelity he could depend.

† Natives of Sulimána, a territory to the N.E. of Melakúri, and separated from it by Tambakka and Limbá. It was visited by Major Laing in 1822.

halting-place. He has been a kind friend to me, and will, I fear, suffer from having preferred the approbation of the colony to that of his own people."

Mélakúrí stands at the highest point to which the river bearing its name is navigable. Its situation is picturesque, as it is built on the sloping banks of a large basin, formed by the confluence of the Mélakúrí and Mawretta rivers, and partly by the obstruction to their passage occasioned by several small rocky islands covered with brushwood, here and there overshadowed by a tall cotton-tree.* To the N.E. and S. it is surrounded by undulating hills either now cultivated, or covered with thick copse, the remains of former cultivation. Some few relics of the primæval forests may be perceived here and there. To the W. the river is shut in by a dense mass of mangroves,† which forms a beautifully tufted screen of dark green foliage. The trunk of a large tree, which formerly served as a bridge over the brook on which the town stands, gave rise to its name Mél-a-kúrí, *i. e.* "the bridge over the brook." The town consists of four distinct quarters: Mélakúrí proper, or the Old Town; Brámaya, or Ibráhimíya, Ibráhim's Town; Fá-Morriya, Fá-Morri's Town; and Aliya, or Ali's Town.‡ The two former stand on the S. and the latter on the N. side of the basin described above. They are separated by narrow strips of ground, but appear at a distance like one connected town. Each has its distinct governor or chief, who apparently has little influence or authority. Alifa himself, who resides in the oldest and principal quarter, though nominally sovereign, has not even the power to punish malefactors when they are protected by the inferior chiefs. Mélakúrí is not of any great age. It was begun by Boro Láí (El Hájí) Sankong, Alifa's grandfather, and fell into decay on the decline of the slave-trade. The establishment of the timber-trade, however, raised it to greater prosperity than ever: but the negroes are improvident; the timber near the town has all been felled, and but for the export of rice to the colony, the inhabitants could not now gain a subsistence. Cotton, hennah, and ground-nuts might be raised in large quantities; and the forests in that and the adjoining countries abound in coffee. The trade carried on by the chiefs is now confined to rice, ground-nuts,§ some cattle, hides, wax, and a little gum. A few carry on a small trade with the Portuguese in kola-nuts,|| furnished principally by the Limbá and Tambakka

* *Eriodendron Guineense* or *Orientalis*: *Ceiba* of Adanson.

† *Rhizophora* Mangle.

‡ "The termination 'ya,'" Mr. Thomson says, "signifies Quarter, District. Thus Madínab, on the Bullom shore," he adds, "is called by the Šūsú, Dallamódúyah, or Dalla Modús Town."

§ *Arachis hypogæa*.

|| Properly Gulu, or Zuru. It is the bean of the *Sterculia acuminata*.

countries; in trifling quantities by *Témné*, or *Tímaní*, and *Benná*. They purchase about fifty for a head of tobacco or two strings of small red beads, called by them *matat* and by the merchants *corneola*, which they sell to the Portuguese at an enormous profit.

Mélakúri almost everywhere shows the marks of decay; deserted houses and ruined gateways continually meet the eye; and its best buildings cannot be compared with those of many *Témné* towns, whose inhabitants are held in such contempt by the *Šūsús*.

The houses, with a very few exceptions, consist of one circular room with two or three small sleeping-chambers under the projecting roof. Their walls are formed by alternate courses of sun-baked bricks and well-tempered clay from a pit hard by; when formed into a ductile mass with water, and trodden down till it has acquired a sufficient consistency, it is used as mortar or applied as a course alternating with bricks in the wall. Inferior houses are made of wattle-work plastered with the mortar just described, and afterwards with a thin coat of mud. The roof is a conical covering of thatch, made of Guinea or elephant grass, the haum of which is from four to six feet in length, and it projects beyond the wall so far as to allow very little light to enter the two doors—the only openings with which the house is provided; but poles or props supporting the outer edge of the thatch form a veranda round the house, in which the natives pass much of their time. To read or write in such dark abodes is, as may be supposed, no easy matter. Of moveable furniture, except a few mats, they have none. Their bedsteads, benches, and cupboards are all fixtures, formed of mud or clay, and often ornamented with square or fluted mouldings—the work, as is all the rest of the edifice, of its owner's wives, who are the only domestic labourers employed by him. One house in *Mélakúri* is approached by a flight of six semicircular steps; the room to which they lead has on each side only a parapet about four feet high, and its roof, made of split and shining bamboo, and about thirty feet high, gives a lightness and airiness as grateful as it is unusual in this country; the neatness of the mats and decorations of the remaining furniture speak equally in favour of the taste and skill of the owner's eldest wife, who was his architect and builder. A couch with curved arms and fluted mouldings, covered with a beautifully coloured web and backed by a white one hanging from the roof, give an air of comfort to this otherwise cold and hard bed. About a foot distant in front of it, a circle of about two feet in diameter cut into the floor serves as a hearth, on which fire is kept burning all night in the rainy season.* The only public

* "Whatever people might imagine as to smoke," says Mr. Thomson, "in a house without a chimney, the lofty roof obviates this; and from experience in the *Témné* country, I can bear grateful testimony to the comfort of a bright fire in a cold stormy night, even within little more than a foot of one's bed." The negroes, however, kept

buildings are two mosques in Mélékúri and two in Fámorriyah; they consist of two contiguous rooms, one for the men, the other for the women, who all repeat their prayers after the same fódé,* or leader in the mosque. Even as native structures they are mean and ill built. In three of these adjoining quarters there are schools: three in Mélékúri, kept by the Fódés, who had altogether thirty-three scholars; two in Fámorriyah, with thirty-one scholars; and two in 'Aliyah, with three scholars. The inhabitants of Brámiyah, the fourth town, are almost all pagans from Benná, Sumbúyah, and Súlíma. The girls are never taught to read. The masters are almost all from Bundu, and therefore Fúlas or Mandigos; the scholars are the domestic servants of their teachers, ill clothed and fed, almost starved indeed, for the four or five years during which they are under instruction. The first ten Súrahs or chapters of the Kórán, which they learn to read and transcribe, without being able to construe them, form the whole amount of the acquirements of most; but a few learn the whole of that book by heart. If unable, when their schooling is completed, to make a proper compensation to their teacher, or provide him with a slave, they remain with him for a time to "work out," as they term it, "their freedom." Those who wish to pursue their studies still further, learn the Tauhídí,† a work on the ceremonies of their religion, by which they qualify themselves to slaughter animals in the legal form; and afterwards A-r-risálata-l awwal and A-r-risálah sání,‡ the former a system of divinity, the latter a work on law, particularly the law of inheritance, &c. A student who has mastered these works is considered as duly qualified to take a part in the discussion of theological and legal questions. Books are so scarce, that Mr. Thomson never saw a complete copy of the Kórán in Mélékúri. A board, called a wallakoch, of white and very close-grained wood, is used as a slate on which the lesson—a short portion of the Kórán—is written by the teacher; and, as soon as learnt, the writing§ is washed off, and the board scrubbed with some rough leaves of a plant called by the Temnes anana, which might be used for polishing wood. The scholar usually begins to learn writing when he has been under his teacher for three months.

The food and clothing, even of the chiefs, is poor and wretched;

fires burning in their huts to drive away the mosquitoes, and M. Adanson found it impossible to sleep in them on that account.—(*Voyage au Sénégal.*)

* The Fode of the Mandingos is the Imám of the Turks; but as the latter word is used by the negroes in the sense of 'Sovereign,' it cannot be substituted for Fódé.

† Tauhíd means the Unity of God: this is, therefore, in all probability, a general treatise on Mohammedan theology.

‡ These titles signify "The First and Second Treatise," and are, perhaps, Mohammedan law-books. It must be remembered that among Muselmans law and divinity are nearly identical.

§ Their ink is probably made, like that of the Asiatics, of lamp-black moistened with gum-water, and therefore easily washed off.

wild yams, unpalatable and often unwholesome, were at that time their principal article of diet: but the ravages made by swarms of locusts for four successive years had impoverished the country. Of the commonest arts and manufactures these people have scarcely any notion; there was not a carpenter, shoemaker, or smith in the place, and no more than three weavers were seen there by Mr. Thomson.

The government is a sort of aristocracy, consisting of sixteen chiefs, nine of whom are Santigis, counsellors or ministers to Alifa their chief, and employed by him to decide cases of inferior moment, or as his envoys on important business. They all possess one or more towns inhabited by their slaves, and without their concurrence, their superior chief seems to have little power of enforcing his commands.

"A more unprincipled people than those of Mèlakúrí," says Mr. Thomson, "from what I have heard and experienced, cannot easily be met with. They live in a state of perpetual enmity and jealousy among themselves, and are oppressive and injurious to such as come to settle among them. I desire most sincerely to thank God for having enabled me to escape from their most inhospitable town, and get safely out of their hands the property intrusted to my care."

The Harmattan prevailed during the greater part of the time that Mr. Thomson remained at Mèlakúrí, and he and his people in consequence suffered from colds and sore throats with slight attacks of ague. Many of the inhabitants look sickly; and from the expanse of water surrounded by hills, and leaving at ebb tide a large area of mud, the exhalations cannot but render the place unhealthy. Two insane persons and one idiot were seen there: and three monstrous births had occurred a short time before; the deformed infants were starved to death, their mothers not being allowed to suckle them; and a *şa-daķah*, or sacrifice,* was offered up to avert the wrath of God and the impending calamity indicated by this extraordinary visitation on the true believers. The whole population of the four villages forming the township of Mèlakúrí cannot exceed 1000 persons. The population in the neighbouring country is much scattered, as their farms occupy much space. They are cultivated by slaves, of whom some masters have 150; Mr. Thomson does not give any estimate of the whole population, but from the above data it can hardly exceed 50,000 souls.

"It was half-past five (P.M.) ere we got out of the town, which, thanks to the thick bush, very speedily receded from our view.

* *Sadakah* is, properly, an eleemosynary gift made to God, and not the sacrifice of a beast. Mr. Thomson seems to have mistaken the meaning of this term.—F. S.

The road was exceedingly rugged and broken, but our joy on feeling that we were once more on our way smoothed every asperity, and we got on with light hearts. The road was a narrow winding path between tall forest-trees, so that it was difficult to ascertain its bearings; but the horizontal line between Mélékúri and the town of Tuggedarro, where we halted for the night, lies N.E. Our course was much obstructed by "lumpers," that is, short lengths of trees laid across the path for the hauling of timber; they are laid about five or six feet apart, and that for five or six miles, so that the traveller has continually to change his pace in stepping over them, which makes his walk very laborious: not one of our party, however, complained of fatigue. The wood through which we passed was interspersed with lofty cotton* and plum trees,† and there were some fine farms with their rice-walls or ricks still standing, on the left hand. The soil is a fine vegetable mould, lying on the ferruginous gravelly freestone common in the colony. At our second halt it was so dark as to make a lantern necessary for those who carried the barometer and other instruments; the chronometer I would not trust to any of the people. Two fine rivulets were crossed, and the water was very acceptable. Three men with country flambeaux met us near the town, having been apprised by two of Alífa's messengers of our approach.

The town of Tuggedarro, of which we had a fine view when the moon rose, was once a considerable place, but is now in ruins, having been destroyed in 1821‡ by Al-Imámi 'Amara, king of all the Moriya and Běnná country, with a great part of Tambakka and Támiso. The blackened walls bear witness to the extent of the town, as well as to the means of its destruction. Mariama, or Maya Modu, its chief, did not venture to return to it till within the last three years, and could not rebuild it in its former style of splendour, with large houses and gateways and ample galleries round them.

Tuggedarro, Lord's Day, 9th January. — Besides our own people, many of the inhabitants, and two of Alífa's messengers, attended divine service this morning. As I could not address them in Súsú, a few only could understand: but they listened with much attention. To several who understood Támné I spoke a few words apart. As the sun was very hot in the afternoon, I asked the chief to allow me the use of the Meshidi (Mesjidi), *i. e.* mosque, which he readily granted. Many people attended and behaved with great decorum. They seemed much pleased with the singing, as some of our colony boys sing well.

After breakfast on Monday morning we left Tuggedarro at

* *Eriodendron*.

† *Spondias*?

‡ See Laing's 'Travels,' p. 7.

8h. 10m. A.M., and after a brisk march over a good road, though occasionally encumbered with lumpers and fallen trees, with a N.N.E. course we reached Mola at 12h. 15m., having travelled about 10 miles. We made three halts of about 15m. each, and crossed three fine brooks, one of them being about 6 yards wide. We crossed several savannahs covered with grass from 8 to 12 feet high, which made the path very sultry; a few stunted oaks were seen here and there. No tracks of even a deer or fileatamba were seen, though our guides remembered the time when elephants and leopards abounded in this country. The roads, it appears, were not so obstructed in Sùltan Láí's time, but Gara Fode, the present ruler of Benná, thinks the impassability of the road by horsemen is a security against an invasion by the Fúlas.

Mola is pleasantly situated on the north-western bank of the river named from it, and ought to be very healthy, as it enjoys the sea-breeze which comes up the valley, passing over cleared and cultivated land. The town is well built, and has at least 500 inhabitants. It is the frontier town on the southern border of Benná, the last brook we crossed, called Kobatu, being the boundary between it and Morriyah. Though in a pagan country, it has a larger and better mosque than that at Mélakúri, and one school kept by a Mandigo, who, however, had only three scholars. Its gardens are well stocked and neatly fenced. Its Chief Seré, or Sidi Kabba, seems to be a vassal of the potent Banna Láí, sovereign of Benná. I am sincerely thankful to God for having twice extricated me from the snares and intrigues of these jealous Mandigos.

Though I was up at 4h. 30m. this morning (Tuesday, 11th January), we were detained till near 8h. A.M. to replace Sultan Modu's servant, who had to return to Mélakúri. Our course was nearly due E. I tried in vain to hire a horse from the schoolmaster, but would not buy one, as I preferred trying what I could do on foot, though I had heard from our guides that we should now enter a hilly country. Being a native of a mountainous country, I was desirous of measuring my powers with the steep roads of Africa. Though I still carried the box containing the chronometer, I have not yet felt what, in Scotland, I should have called fatigue. After crossing two rocky hills covered with wood, two extensive grass-fields, and three brooks, we reached a small slave-town called Méla-Músa, from a mél or tree laid across its brook. It belongs to Mola. The hills were about 300 feet high and pretty steep each way: the streams deep enough to reach a man's loins, but I managed to go over them by nyankatóes, or trees laid across. The road, consisting generally of small ferruginous gravel, with a little reddish quartz lying in a deep rut, was very

wearisome to the carriers, who sunk an inch or two at every step ; however, they trudged on merrily till we reached Méla-Musa at 9 A.M., having travelled full 3 miles, as we walked very briskly.

After resting a quarter of an hour we again started for Kafu, and after crossing a steep hill covered with wood on the western, and with grass and savannah-oak on the other side, we descended into a wide sandy level leading to a woody tract of half-grown forest, at the extremity of which was a fine pool of clear water, formed by some fallen trees which obstructed the course of a stream ; a tree laid across the deepest part, and bound to two others standing on each side of the channel, formed a bridge. Just beyond it we reached another slave-town, also called Méla-Musa, from the bridge just described ; it belongs to Kafu, which we reached at 10h. 20m. A.M. Our distance from the last resting-place was about 3 miles.

Kafu stands on a rather flat circular eminence, skirted by high trees mixed with underwood ; like Mola, it has a handsome mosque, but in every other respect is desolate and ruinous. Its schoolmaster had quitted it about two months previously ; he had been decoyed to one of the slave-towns of Gangi, a neighbouring chief, who, under cover of aiding him in the purchase of slaves, murdered him with circumstances of great atrocity. As this chief was a very powerful man, and supposed to be rendered invulnerable by charms, he was much dreaded, and it was not without stratagem that he could be captured and brought to trial : but that has now been done, and a general convention of the chiefs of Benná has been summoned to Walliyah (Gara Fódé's capital), and many even from Tamakka, Támiso, and Fúta, to witness his trial. Banná Láï, who was previously only feared on account of his invincible courage, is now admired for his resolution in vindicating the rights of a defenceless traveller. Of this murder we heard on landing at Malagiya ; and Sannasi and Mayer were cautioned by Morri Láï against entering the Benná territory, lest they should experience the same fate ; happily, they did not think such advice deserving of notice.

Káfu seems never to have had more than three or four hundred inhabitants. Its chief, the Keletigi, who is now blind, and his deputy Morri Bamba Láï, brought us a large basket of rice and a little ewe lamb, for which he would not receive anything in return ; he was more grateful for the small presents I made on our arrival, worth about a dollar and a half, than Bamba Mariama Láï at Malagiya, for his thirty bars, though the latter place is not so large as Káfu.

At 3h. 15m. P.M. we left Káfu, and after crossing a large woody tract, occasionally broken by open fields and watered by four streams, at 6h. 10m. P.M. we reached Kukuna, a small town belong-

ing to Kevéa Modu, a relation of Kevéa Siddiki,* who is a powerful chief in Torko. We had travelled about 7 miles, and about 13 since we started in the morning; the roads are very heavy, and it is a hard day's work. On entering the cleared space on which the town stands, a splendid prospect opened on our view: to the north, in the midst of a wide range of wood, rises a range of mountains apparently 800 feet high, the outline of which resembles the ruins of a vast citadel; the portion of this range here visible is called Kofiu by the Benna people, and said to be the southern termination of the line of mountains which approaches the sea near Kakandi and the Rio Nunez, stretching for at least eight days' journey from north-west to south-east through Benná, Kanneya, Sumbúya, Kinsang, and Yangfúi. The same range, as I learn from Mayú Danda, a Mandigo trader who has travelled through the whole country, extends eastwards through Bundu and Gabu into the interior of Bambúk, or Bámbughu, sending off numerous branches southwards into Talla and Sanno; the whole being not less than two months' journey. Our course to-day was N.E.

Kukuna is a well-built little town, containing about twenty houses sweetly situated on the northern slope of the woody ridge along which we had been travelling. It is well-fenced, has a neat little mosque, and a school. I was allowed to use the mosque for our evening prayers.

We left Kukuna at 7h. 50m. this morning. The mist from the river Tabakhúri between us and the mountains occasioned so thick a haze that we could only see their outline indistinctly. Three distinct mountains were now visible, forming a striking contrast to the plains covered with wood or tall guinea-grass, through which we had previously travelled.

After a brisk walk through a tract of forest much entangled with brake, or underwood, and traversed by three rivulets running over a smooth pebbly bed of quartz and ironstone, we halted at 9h. A.M. for half an hour, and passing over a smooth and finely shaded road, reached Tassin at 10h. 15m. A.M., having travelled at least 7 miles. The ferruginous gravel is here covered, in the woods, by dark vegetable earth to the depth of 6 or 7 inches; near the streams it is dark brown, and somewhat resembles peat. Here we first saw preparations for smelting iron.

On our arrival we were conducted to the house of Morri Láí Yansáni, brother of the chief Morri Lusenne (Al Hosein), who himself came soon afterwards with a large number of chiefs to welcome us to his town. He is a corpulent man, apparently of about seventy years of age, with a mild and thought-

* The Arabic Siddik, one of the titles of Abú Bakr.

ful, but rather heavy, countenance; he was simply dressed in blue country cloth, with a white cap on his head, while most of his chiefs were dressed in flowing gowns and embroidered trowsers of English manufacture, with a profusion of amulets, called sebbé, which are ornamented with leather bags enclosing short sentences from the Korán.

Tassin is a large town, well fenced with mud walls about nine feet high, and pierced at intervals of two or three feet with holes for musketry,—a stick, about as thick as a man's wrist, is built into the wall while the clay or mud is soft, and withdrawn as soon as it is sufficiently hardened. The houses are in good repair, large, and commodious, surrounded by walls, and provided with yards behind them for cooking and domestic purposes; but the mosque is merely a shed in ruins, which does not give a favourable impression as to the religious feelings of the inhabitants.

In a long interview with the old chief in the evening, I fully explained to him the governor's intention in sending me through his country to Fúta, namely,—to establish a friendly intercourse between the colony and the nations in the interior, so that all traders might have a free and expeditious passage to the sea. War and jealousy, I observed, lead only to devastation and ruin, while peace and commerce produce wealth and improvement; without peace there can be no industry or happiness. The old man cordially assented to all this, and said that in the late wars he had endeavoured to remain neutral and act as a mediator. To his neighbour Banná Láï he seemed very favourable, but not so to Alifa, of whom he said little and spoke coldly.

Here I received a messenger from Alifa, with three boys to assist my carriers; as he knows how much I am distressed for men capable of carrying burdens, I am much disappointed at seeing only three, and they mere lads.

Tassin stands high, and the country to the north is quite open. The eminence on which it is placed is circular, approached by a gentle ascent, and about a mile in circumference; around its base for at least half that distance flows a small but rapid and deep river, skirted by almost impervious thickets, overshadowed occasionally by noble cotton-trees and a few white oaks,* still spared for the sake of their shade. Many of the cotton-trees † (the bentang of Park) are more than a hundred feet high; some have been lately cut that measured 96 feet to the first limb. The view northwards extended over the wide woody plain which we had crossed, now stretched out at our feet. There, trees of every

* Undescribed timber-trees; very different from the oak.

† *Eriodendrum Guineense*.

form, from the graceful feathery palm to the huge towering bentang, formed a rich foreground, varied with every tint of green, while the dark rocky sides and green summit of Kofiu rose proudly over the luxuriant plains below, his projecting crags being now brought into bold relief by the beams of the morning sun. A thin streak of grey vapour near the base of the hills marked the early course of the Mélékúri River; it reminded me of the view towards Windsor from Hampstead-Heath, and of East Lothian as seen from Gifford.

At 9 A.M. we set off from Tassin, our course being E.N.E.; but for the Sulimas, whom I was obliged to pay at Mélékúri, we might have started at 7 A.M. The stream at the foot of the hill where we crossed it is about 8 yards broad, and in many places 6 feet deep. The trunks of the trees which overshadow it were entwined with climbing plants, many of them in flower. Ferruginous gravel with quartzose pebbles covers its bed. We observed several small dark-green fishes somewhat resembling the moss-trout in Scotland. A large open meadow, more than a mile in width, covered with short grass, the first fine pasture I have seen here, lay between the woody tract from which we had just emerged and another wood about a quarter of a mile distant. Sannasí remarked that this resembled the meadows on the banks of the Jálíbé in Sánkara and Wásulú. It was bordered by tall acacias in full bloom. Not a stalk of tall Guinea or elephant grass was to be seen; but on either side of the sandy path a sweet little purple flower, something like the harebell, grew plentifully among the grass. The woody tract which succeeded was so thickly entangled with brushwood and creepers as to be almost impervious to wild animals. Some creeping plants resembling vines, and as thick as a man's arm, hung in festoons from tree to tree. One exactly resembling the common vine in form and bark, which I first saw in the Isle of Tombs, yields when severed an abundance of clear, cool, and most refreshing water. It is called by the Témné people the Kosso's bottle, as the warriors of that nation use no other water when travelling in their forests.

Two other tracts of meadow land, alternating with belts of wood, succeeded. These pastures are said never to fail, in consequence probably of the neighbourhood of the Kolantang,* which bathes their eastern side. These fine fields had more the appearance of artificial lawns than natural meadows; they were skirted by flowering trees, chiefly papilionaceous, but no young trees were anywhere shooting up amid the grass. The Fulas, who are a pastoral people, annually remove about Christmas

* Or Collantine, as Mr. Thomson spells this name.

welfare of themselves and all the neighbouring countries. He took the precaution, however, of increasing his stock of ammunition; and finding his Sierra Leone people well prepared to resist any attack, quitted Yaneya at 3h. 10m. P.M. on Monday the 17th of January, and at 4h. 15m. P.M. reached Fangimoduya, with a course N. by E. The road passed chiefly through a large meadow, occasionally skirted by wood. Here he found Lamina (El Amin), Alifa's nephew, and some of Gara Fodé's chiefs. Instead of assisting him in his progress, Alifa had sent his nephew to dissuade him from advancing, or rather to command him to return to the colony. The remainder of his hired carriers now deserted him, and he was reduced to the most distressing perplexity. Alifa's nephew, Lamina, however, privately contradicted all that he had affirmed publicly as to his uncle's wishes; and assured Mr. Thomson that he would soon send him bearers and an escort.

On the 21st of January an immense flight of locusts came from the E., and passed over the town for 3 hours without intermission, but for the colour exactly resembling a storm of flaky snow, so darkening the air as to produce a sort of twilight. They were much larger than any Mr. Thomson had seen in the Témné country, and do not attack the cassada,* though they lay waste the rice and corn fields. On Monday the 24th they returned from the N.W. In cold weather they alight early in the day; when it is warm, not till about 4 P.M.; and at sunset they fly off into the woods. The sound of their flight is like the hum of the distant sea.

At length, on the 26th of January, Mr. Thomson, finding that no reliance could be placed on the assurances of his hosts, and that their object was to detain and perhaps plunder him, resolved, as he could not venture to leave his property in their custody, to send his son, a boy about 12 years old, with one of the most trusty of his people, to Gara Fodé, chief of Banná, to inform him of his want of carriers, and request his aid; and in the following afternoon his messenger returned, accompanied by Gara Fodé's eldest son, with a promise of bearers very soon, and the good tidings that the old chief had literally received "Billy," Mr. Thomson's son, with open arms, and regaled him with a "Benjamin's mess."

On the 28th, the twenty carriers arrived from Walliya; but unfortunately more were wanted, for Mr. Thomson, doomed, as it appears, to be the dupe of fallacious promises, relying on that of Binté Modu, the head man or governor of Fangimoduya, refused an offer of such assistance from another quarter, and had the

* *Iatrophia Manihot* (*i. e.* *Mányok*).

mortification of receiving from Binté Modu, when he was ready to start on the 29th, after a delay of some hours, a positive refusal to give the promised help.

However, having with some difficulty prevailed upon his carriers to take up their loads, and himself taking a large portion on his own shoulders, he left Fangimoduya about 10 A.M., and following a N.E. course, reached Senneya, the next town, at 12h. 10m., though not more than 3 miles distant, in consequence of the many halts which the weariness of his carriers occasioned. Here they with much difficulty hired three more carriers; and at 2h. 30m. P.M. again started, and travelling over dreary fields, quite bare and scorched (the grass having been lately burnt to promote the growth of a fresh crop), for 3½ hours, reached Diggi-diggi, the only town between Senneya and Wallia, at 6h. 30m. P.M., a short time after sunset. These extensive grass-fields are every here and there intercepted by small tracts of copse, the large trees of the forest having been all cut down. About half way to Senneya the road crosses a clear and rapid rivulet running between rocky banks shaded by noble trees, and falling into the Kollantang about half a mile lower down. An immense oak which had fallen across it, formed a natural bridge for the passengers' convenience. Their course from Senneya to Diggi-diggi, a distance of at least 12 miles, was nearly N.E., parallel with the river Kollantang, the northern branch of the great Scarcies (Dos Cárceres); and till near the close of the day the heat was very oppressive. In the first part of the way from Senneya, the Kofiu range of hills is again visible. It receives the name of Sangari in the Bagó country, and apparently runs E. for about 20 miles, and then turns at a right angle to N. or N.E. by N. The banks of the river are richly wooded, and adorned with every tint of green, from the dark cypress-looking mimosas to the bright hue of the simmé and white oak, now bursting into leaf, and providing the grey forest monkey with his favourite food. Diggi-diggi, a small town, is remarkable for nothing but an immense monkey bread-tree (*Adansonia digitata*). These trees possess a wonderful power of restoring their bark when hewn off. This sanative process seems to be effected by their secreting some viscid fluid. Old wounds by the axe present the appearance of hewn and slightly polished granite.

31st.—Having left Diggi-diggi at 9h. 15m. A.M. on Monday the 31st of January, the travellers reached Wallia at 2h. 10m. P.M., having in fact been advancing only 3½ hours, in consequence of the frequent halts which the excessive heat, badness of the road, a loose gravel, and their oppressive loads rendered indispensable.

Here they received a very cordial reception from the chief or king, Gara Fódé, a stern-looking man of nearly 70 years of age,

with even a ferocious expression of countenance. He was so determined to see the white stranger whom his neighbours wished to keep in their own power, and send on, if they did allow him to proceed, by another road, that he had sent parties to way-lay him, should such an attempt be made; but notwithstanding all this, he was ultimately so much swayed by the native notions of etiquette, and the intrigues of Alifa, the Mandingo chief, as to detain Mr. Thomson in his capital till the 25th of March—at first, because he was ignorant of the real motives by which Alifa was influenced; and subsequently, from his persuasion that his guest could not proceed without endangering his life, on account of the severe illness from which he was then just recovering. Mr. Thomson was not yet able to walk, and the old king would not suffer him to be carried in a hammock over the rivulet Kélisé, which it was necessary to pass, as no man, he affirmed, was allowed by the spirit (Jinna) of the stream to cross it, except on foot, with impunity.

This delay, however, was turned to good account; for Mr. Thomson, by his patience and firmness, so won the old man's heart, that he very willingly signed a treaty which gave the people of the colony, in perpetuity, full licence to travel through Benná, and all the countries under Gara Fôdé's influence, on their way into the interior. As the most learned natives could not compose in Arabic, Mr. Thomson was obliged to make the attempt himself; and after some trials, at length succeeded, much to the astonishment of the natives. This was the more deserving of credit, as he had been deprived of the use of an Arabic dictionary by the selfish and disingenuous conduct of one of the missionaries in the colony.

Wallia is situate in a deep hollow formed by two convergent crescent-shaped hills, and is nearly surrounded by a rivulet which, though full in the rainy, is nearly stagnant in the dry season. Its noxious exhalations, moreover, are scarcely moved by a breath of air till the breeze sets in about 4h. 30m. P.M., the average height of the mercury in Fahrenheit's thermometer being then about 86°. With such a position, the climate cannot but be pestiferous; and Mr. Thomson first suffered from a severe attack of ague a few days only after his arrival in the capital of Benná. This, however, did not continue long; but before the middle of March, he and several of his people were attacked by a very painful and distressing cutaneous eruption, which confined him to his bed for nearly a month, and even when he was convalescent, deprived him of the power of walking.

At length on Thursday the 24th of March he was enabled to set off from Walliya, at 6h. 30m. P.M., having with great difficulty got sixteen carriers to assist in removing his baggage. His course was N.N.E., and at 9h. 40m. P.M. he reached Sakhóya, having

been on foot $2\frac{1}{2}$ hours, and travelled about 10 miles. The woods and grass were burning on all sides, and looked like the lights of a distant city in a dark night, as only the extremities of the branches were on fire. When the trees were lofty they resembled stars. At times the grass was blazing on each side of the narrow path. Sakhóya probably takes its name from Manga Sakho, brother-in-law of Gara Fódé, and Mr. Thomson's host or landlord in the Anglo-African style of the colony. Here as elsewhere the devastations of the locusts year after year were severely felt. "The people like those at Walliya," says Mr. Thomson, "seem now to live chiefly on wild yams and cassada leaves cooked like spinach or kail." "They could not muster half a bushel of rice, and charged 7 bars (lbs.) for a sheep." "This town, like Tugedarro, appears wholly given up to idolatry. Before the chief's door, in the centre of the yard, stands an old post almost consumed by fire, and in it are stuck two small axes, with a strip of cloth streaming from one of them; and around it are placed, at unequal distances, five large stones, one of which, a round one, is wound round with thread, and from a pole about 18 feet high a long double streamer of blue paper or rope floats in the breeze. We called on the old king, a man of about 105."

"In the cool of the afternoon, at 4 P.M., we started again with a N. by E. course, and at 9 P.M. reached Fonsunyar. Our road lay over hill and dale, forest and pasture. We crossed a beautiful small stream called Kélisé, about 20 yards wide, and from 2 to 3 feet deep, clear but not rapid, and running over a rocky bottom of hypersthene, of which a specimen was picked up. The valley through which it runs is about a mile across. The soil here is gravelly or rocky, of the usual character. In some places the burning grass presented a sheet of flame 5 or 6 feet high, and difficult to pass. A curious dry rocky basin, 30 yards wide, occurred in an elevated field. Here we first saw unripe bimbé-berries, with a pleasant acidulous flavour something like that of the berberry. The tree is from 6 to 15 feet high. There were vast numbers of small conical tubes of clay extending vertically downwards in the ground, and some of them rising 4 inches above it. They are formed in the rains by a white worm."

At 8h. 30m. A.M. of the following day they left Fonsunyar, and reached the town of Baya-baya at 11h. 55m. A.M. "We ascended," continues Mr. Thomson, "the steep hilly road leading from the brook on which the town stands, by a sloping and often precipitous path. On reaching the summit we had a wide prospect over an undulating country, finely wooded or laid out in farms. On the left, to the N.W., rose the hills of Binyab, rocky, and covered with scattered copse and Guinea grass. On the right, the long low mountains of Támiso. Our road lay chiefly

On Monday the 16th of May Mr. Thomson and his followers left Kambaya, crossing the brook Dyerifó at 1h. 45m. P.M., their course being N.E. by N.; and at 5h. 30m. P.M. reached Kulungi, belonging to Sayúya, having travelled about $2\frac{1}{2}$ hours, over a distance of about 8 miles. The road was very rocky: they observed a large mass of quartz, and others of conglomerate, granite, and hypersthene scattered about. The dark bluff cliffs of Talla are composed of granite, and bear much resemblance to the hypersthene of Sierra Leone. Several rivulets, but all dry, were crossed. At this place they were very hospitably entertained.

On the following day their course was N.E. by N. They started at 9h. 25m. A.M. Kulungi lies under Talla as Kambaya does under the back of Kuru. They halted, at 10h. 45m., at Dantumaya having all the way ascended a hill of blue ironstone. To the W. the country was one vast and apparently very fertile level, with here and there a solitary hill rising on the horizon. Setting out again at 11h. 30m. A.M., they descended a very steep hill, on which the town of Kom-go stands, and soon reached a clear running stream of fresh water, called Kakkéli, and arrived at Doyonyah at $2\frac{1}{2}$ P.M., having travelled about $3\frac{1}{2}$ hours, or 12 miles. This is a small but neat walled town. Over the back or cliff of Talla, the hills run N. by W., whereas before they had formed a semicircle, with Kuru and Talla as the two salient points. Here Mr. Thomson saw a chief and his child who had a distaste for sugar.

On Wednesday the 18th, as two of their carriers had run away in the night, they were not able to start till 8h. 30m. A.M. Their course was due E. In an hour and a quarter they reached Ferikiya, where the hills turn to the N.E. A stream called Kabeli, running over a rocky bed of hypersthene, and famous for its plentiful supply of fish, was crossed just before they came to Nyenziya. Though now very narrow, this river is very broad in the rains. There is a high hill here with a cliff on the top, called Wonki-fangé. On reaching its summit, at 11h. 45m. A.M., they entered Támiso and quitted Talla. After being detained by a long palaver, they started again at 6h. 45m. P.M., and reached Tamaniya precisely at 8 o'clock.

On the following day, having started at 8h. 15m. A.M., with a N.N.E. course, they reached Karmoya at 1h. 10m. P.M., having travelled 4h. 30m. over a long arid and now burnt hill, covered with savanna oak and hypersthene rocks. Having travelled again from $8\frac{1}{2}$ P.M. till 3 A.M., and crossed the Malé, a small stream, they had a meal, and slept in the open field till day-light.

At about $6\frac{1}{2}$ A.M. on Friday, they reached Yé-mundé,* a

* Yémíng-dé, Water-drinking-mouth, in Súsú, marked without this name in Wait and Winterbottom's map. See Winterbottom's *Sierra Leone*.

watering-place noted for the seizure of Fúlas and Šúsús, and at present the boundary of Futa.* At 10 A.M. they passed the Kbéssé, a stream still running. They soon afterwards reached Fúla Môduya, and were well received by the old king of Támiso, Fúla Modu, who had been very kind to Mr. Thomson's little boy, whom he had sent, on the 3rd of that month, to inquire why carriers had not been sent for the removal of his baggage.

After a slight attack of ague on Saturday the 21st of May, from sleeping in a damp bed, Mr. Thomson was sufficiently recovered on the following Monday to leave Fúla Môduya at 9 A.M., and at 10h. 10m. crossed the Lolo, there 70 yards wide. This is the boundary between Támiso and Fúta Proper. At 5h. 5m. P.M. they reached Dyambiláya, having travelled nearly 6 hours—a very long journey, considering the wretched condition of the people, who had been for a considerable time starving, and were without a shoe to their feet. Here, though now in the territories of the Imám of Fúta Jallo, they had the greatest difficulty in procuring carriers; and, when obtained, nothing but constant vigilance could prevent their desertion. The approach to the Lolo was very fatiguing, over a pleasantly wooded but rocky tract, leading to the steep descent to the river, then reduced to a few shallow rivulets. Its rocky bed consists of hypersthene, in some places well polished; and its depth in the rainy season, to judge from the marks on its banks, cannot be less than 16 feet. The only passage across it is by a nyankatá, or flying bridge, about 20 miles higher up. It rises near Ya-guba-fuga, a large town, one day's journey S.W. of Téliko, and joins the Katta, a few miles below Sammaya, the capital of Tambakka, Kbokkoró Suri's usual place of residence. The view from the heights above the river is very cheering. A large slope of well-cultivated ground, from the river's edge to the brow of the hill, stretches for a great distance from N.W. to S.E., and is closed by the wood-crowned cliffs on the opposite side of the river. The Fúla side is one unbroken tract of well-cultivated land, studded here and there with small white circles, containing half a dozen beehive-like houses, thatched down to the ground, with only a small opening in front, not larger, in proportion, than the door of a beehive. These hamlets are the marragas or slave-towns of the chiefs, inhabited by their agricultural labourers. Those in which their head men dwell are called "warre's;" by the Šúsús, "gorré." They looked, as seen at a distance, neat, clean, and well fenced. The Támiso side of the river, though picturesque, is quite uncultivated, and calls forth none of those pleasing ideas of plenty and comfort which are awakened by the neat rice-grounds of the Fúlas on the opposite

* In the time of Watt, Tamiso did not belong to Fúta.

bank. The woods, here well supplied with water, contain much large timber: they are peopled by crowds of the dog-faced monkeys, called "dumbu" in the colony; and the travellers were told they might be thankful that none of the stragglers were attacked by them. From the summit of the ascent, the Támiso hills, gradually fading into blue mist, gave the idea of a vast rampart with huge projecting bastions; and where they rose from the brow of a woody hill, crowned as they were with lofty trees, they had the appearance of a richly crested helmet. These hills all consist of hypersthenic granite, with a crust of ferruginous freestone, the dust of which, mixed with vegetable mould, forms the soil of the plains and valleys.

The country onwards was undulating with scattered wood and pasture, the latter now reduced to a few naked blades of grass, the whole having been completely devoured by the locusts. Many of the chiefs had lost one-fourth of their cattle; but the lower regions of Támiso and Tambakka had not suffered in anything like the same degree. The rice-crops had also entirely failed for four years successively. On their way to Dyambilúyah the travellers came to a Warré, or herdsman's town, which had all the appearance of a gipsy camp—the houses miserable huts; their inhabitants, men, women, and children, in a wretched condition; the latter naked, the former covered with dirt and tatters. The platted locks and strings of large amber or agate beads which adorn the women's heads show they are not indifferent to dress, though careless about its condition: but in figure, address, and features they differed from and were much superior to any other natives Mr. Thomson had seen in Africa. Their complexion was a light olive, and many had well-formed and even delicate features. The men were usually lean and long-shanked, with handsome faces, and a profusion of long, shining, plaited, silky locks hanging down upon their shoulders. Their ample breeches were all in rags, and seemed never to have been washed. A sleeveless shirt of pale blue or white cloth, manufactured by the Súsús, or people of Támiso, just reaching to the knee, the ample breeches already mentioned, a small white cotton skull-cap, and a pair of sandals, complete the dress of the men. The women had smaller cloths* or wrappers than elsewhere.

A patriarch, who was very desirous of seeing a white child, was here visited by Mr. Thomson and his son. His name was Morri Seídi Sollo. He had a dark olive complexion, a long face and a long aquiline nose, a high forehead expanding above, a well-formed and expressive mouth. He wore a large full-sleeved robe, and

* *Panhos*, in Portuguese, converted into *pango*; *pagne*, by the French; and *pangs* by the English settlers on the coasts.—F. S.

a regular turban twisted round a red skull-cap. His white beard was neatly trimmed, and his whole appearance was truly venerable. He said he was a young man at the time of the invasion of Futa by Konta Bráhima, in 1760,* and therefore could not be now far short of one hundred years old. He had many sons about him, all, like himself, grey-headed. He felt with his hands the hair, face, neck, and hands of Mr. Thomson's son, and was much pleased at having seen, what he never expected to see, a white child. A large calabash full of new milk afforded many delicious draughts to Mr. Thomson and his son; for the natives do not like new milk, but prefer it when acid, and put salt into new milk whenever they have occasion to drink it. They put butter into the sour milk and whip it up like cream, which is called "kos-sang," but fresh milk is named "biráda."

When nearer to Jambilú or Dyambilúya, the end of this day's journey, they began to meet Fúlas, with their hats made of bark, and armed with bows and arrows, who stopped to look at them; and, among others, a hunter, with ample blue breeches, a very short sleeveless tunic or jacket, and a large saucer-shaped hat with a small conical crown on his head. He had just killed a wild pig, which, as a Muselmán, he did not choose to touch, but was very glad to sell to the caravan for two heads of tobacco. It turned out to be much smaller than they expected, measuring only 3 feet 2 inches from the snout to the tail, and being entirely bare of hair, except a scanty black mane and a few bristles for a tail. The position of its eyes also, nearly at right angles with its forehead, made Mr. Thomson consider it as peculiar, and he therefore made a sketch of its head. When slaughtered, its flesh proved very palatable. The Fúlas, it appears, feed their horses with the flesh of wild boars in the cold season from October to February; they do not give the meat raw, but fried. When cows or sheep die, their carcasses are also reserved for the horses and the slaves, who, however, are not indulged with any part of the mutton.

After travelling for some miles through the open forest described above, and consisting of grass, oaks, and locust-trees, they came into a more open and elevated tract, well stocked with fine cows, whose pale brown and sleek sides gave promise of abundant supplies of milk. The bulls were large and fat, in consequence, as was said, of their being supplied once a quarter with salt. Two eagles were here observed, considerably larger than the yiba or vulture, but much less than the golden eagle of the Scotch mountains. Their colour was a deep brown, and their legs were yellow or

* Laing's 'Travels in Western Africa,' p. 407. Mr. Thomson, quoting no doubt from memory, says 1750, and consequently supposed the old man to be about 110 years of age.—F. S.

fawn-coloured: they appear to be about 2 feet long from the beak to the rump. Mount Saferé, a large flat-headed hypersthenic or granitic mountain, was soon afterwards in sight; it is part of an extensive chain which runs from N. to S., through the province of Kébu.

At 5 minutes past 5 P.M., they reached Jambilú, or, as the Mandingos call it, Dyambilúya, pleasantly situated on one side of the base of a long, low, well-wooded hill.

The edge of the thatch here almost touches the ground, a part only, about 3 feet high, being cut away on one side to afford an entrance. The travellers were first ushered into the mosque, of which the floor and walls were formed of light-brown clay, very neatly moulded and ornamented, and so nicely finished that the angles were as sharp, and the surface as finely polished, as if they had been constructed of hard stone. The height under the centre of the conical roof was not less than 30 feet. Furrows on the floor, running from N. to S., 3 feet apart, marked the places where the sheep-skins, used as carpets, were to be laid at prayer-time. The walls had been washed over with an exceedingly light grey clay, which made the building much less gloomy than their houses usually are, though it received no light except through the three doors. The low projecting eaves were designed to protect the gallery round the building from the wind and rain. Rags, filth, and finery abound as much here as in the humbler worrés, and present a striking contrast to the neat and tidy appearance of the Temnés and Sušús, who are looked down upon as an inferior race by the dirty Pullas,* as they here call themselves. Here, as usual, Mr. Thomson, though the king's guest, found nothing ready for his reception. However, in less than two hours' time, he received a large supply of rice and kossang, which tasted exactly like whipped cream, and is the chief food of the Fulas, and plenty of new milk. Instead, however, of being able to proceed the next day, as he expected, to Teliko, he found a great difficulty in procuring carriers; the Imám, he was told, was obliged to beg for them of his chiefs as a favour. In the night two heavy tornadoes nearly deluged the house which Mr. Thomson and his son occupied, so ill was it thatched.

This town, like Fula Moduya, had lately been burnt down, and its inhabitants were now, for the most part, at their marragas, or farms, so that their houses had not yet been well repaired, and the place seemed almost deserted. Their house-doors, made, with great waste of time and labour, from the huge projecting

* Or Fullas, as the learned Mandingo Abú el Bekr Šiddík named them. As the letter P is unknown to the Arabs, it is probable that the resemblance of Fula, šláni, and felátah to the Arabic words fulán and fuláni is accidental. The original term seems to be Pulla, or Pullo: whence the French Poule, Pealo, &c.—F. S.

roots of the bentang, or cotton-tree,* and their clumsy antique locks and keys, were here particularly observed and delineated by Mr. Thomson. Their farms were in a high state of cultivation: the fundi, their staff of life, had just been sown, and not a stone or a weed was to be seen in the fields. The surrounding hills are low and round-topped, and covered with trees, chiefly locusts,† “perhaps the most picturesque of all trees, with their tortuous black boughs and finely expanded, round, tufted heads.” “Nor are they less valuable than useful: their sweet, gingerbread-like flour mixed with water forms a refreshing gruel; and, from the cotyledons of their seeds, a kind of cheese, called kenda, is made, which, when dissolved in boiling water, and seasoned with a few ground-nuts, furnishes a more savoury soup than is often obtained from meat or fish: it is a purely vegetable soup.” The gardens are here excellently fenced with strong fig-nut‡ hedges, which not even oxen can break through, much less sheep and goats. Their cattle, which were in tolerable condition, had been for more than two months fed on leaves and the young twigs of trees, as the locusts had devoured all the grass. While at this place Mr. Thomson was amused, and at the same time grieved, on hearing his interpreter, Sannasi, tell one of his people to carry something which was lying in the open veranda into the house; as they must remember they were “no longer among the Káfirs in Támiso or Benná, where you might hang up your clothes on the fence at night and be sure to find them there in the morning; but in Fúta, where, from the chief to the slave, you must hold every stranger you meet for a thief, and where many even of your friends will prove such unless well watched.” “What a contrast,” justly adds Mr. Thomson, “to be drawn by a native of Fúta between his own countrymen and those nations whom they contemptuously term Káfiri people—what a stigma on his fellow-Muselmáni!” On two different occasions Mr. Thomson, while at this place, received visits late at night from chiefs who came alone, and by stealth, to beg him to impart to them, and to no one else, a most invaluable secret—a secret which the Tródés told them would insure success to the possessor of it in all his undertakings. This grand secret, sought with so much mystery, was nothing more than “the true name of the mother of Moses.” This Mr. Thomson readily wrote down for them; cautioning them at the same time against putting their trust in such follies, or in anything but the name of God.

Here, notwithstanding they were in the Imám’s dominions, and only a few days’ journey from his capital, the same difficulties in obtaining carriers recurred, and it was not till Thursday the 26th of May that they could proceed onwards.

* *Eriodendron* or *Bombax*.

† *Parkia*.

‡ *Physic-nut*? See below.

Dyámbilúya is the frontier town on the S.W. side of Fúta, and has a considerable trade in cattle and butter, which, when melted down like lard, will keep good for a year, and for culinary purposes is quite equal to European butter. Their cows give little, but very rich milk; butter is therefore more profitable to them than cheese. The people are all Herimankí, or pastoral Fúlas, and seem to be very indifferent to the education of their children, as they have no schools. When travelling, they wear, as before observed, hats made of bark or plaited straw, and carry a bow and arrows, the points of which are barbed and curved obliquely, which gives them a rotatory motion;* they are never fledged. The Fúlas are decorous and circumspect, courteous and complimentary, full of promise, but tardy in the performance of their promises.

At 5 minutes past 12 the travellers quitted Dyambilúya, and, after halting for a short time in a beautiful valley, like an English park, and filled with very tame and docile herds, resembling Ayrshire cattle in almost every point except their diminutive udders, they came, in another beautiful valley, to a hamlet of seven houses, surrounded by enclosures, well fenced with strong hedges of the physic-nut (*Croton tiglium*). The inhabitants, chiefly women, were neat and well dressed, and many had large heavy gold earrings; their complexion was the yellow hue common in Fúta and sometimes seen among the Témnés. In this day's journey they crossed a small stream, about 18 feet in width, called Jagonké, three times. On its banks they found many trees bearing in abundance a sort of black plum about as large as a damson; its fruit was slightly acid, strongly astringent, and rather bitter; it was soft and pulpy, and very palatable.

At about 4 P.M. they were stopped and invited to dine with Alifa Abú Bekr, father-in-law of Braïma Modu (Ibráhám Mahammud), one of the most renowned warriors among the Fulas. He was well dressed, and had a mild, benevolent countenance. "His complexion was of a dark olive, and his features quite Caucasian; crisp hair being the only African mark he bore." His premises were in very neat order, and the dinner abundant; to which, on their taking leave, a fine goat was added as a parting present.

In about an hour's time after they left this hospitable mansion, the long, narrow, and well-cultivated valley through which they passed, bounded by richly-wooded hills, here and there backed by granitic peaks and precipices, at that time gilded by the rays of the declining sun, opened upon Teliko, which they reached about 6h. 30m. P.M. They were delighted in the latter part of their journey with the songs of a great variety of birds; particularly with the clear, mellow notes of the lakadina (*i. e.* talk-well),

* And probably in consequence a straighter flight.—Ed.

a small species of thrush, only half the size of the common one, from which it also differs in having a black breast with white spots. There was also a great variety of doves and wood-pigeons, many of which are never seen near the sea-coast. The coolness of the evening, the green of the woods, in which not a single tree of tropical form was to be seen, and the singing of the birds, carried Mr. Thomson back in imagination to the woody hills and green glens of his native land, and almost made him forget that he was in Africa.

Téliko seemed to be little better than a heap of ruins. Its fence of the physic-nut in some places still 12 feet high, and proportionally thick, is full of gaps, and in many places quite gone. All this was owing to the civil war by which Futa had been desolated for nearly half a century. Its mosque is a large and handsome native structure, massive and chastely decorated with the usual Arabesque mouldings round the doorways. It has two doors, and on the east the small enclosed space is used as a pulpit.* It is constructed of a very light-coloured and well-smoothed clay, so much so that it might be mistaken for Bath-stone.

The remains of houses and enclosures all round the present town show how much larger it once was. On its eastern side there are several beautiful green knolls covered with the richest verdure, and here and there clumps of Gardenias, then in full bloom, and filling the air with their fragrance. In appearance and odour they closely resemble the Narcissus. Their petals are so fleshy and white, that they might be supposed to be made of wax.

In the course of the night after Mr. Thomson's arrival at this place, he was disturbed by a heavy tornado, and found, to his great discomfort, that the thatch of his new abode afforded almost as little protection as that of his lodging in Dyambilúya, where he and his son had been deluged by such storms twice in the same night.

Though now within 3 days' journey of the Imám's capital, and on the whole hospitably entertained, Mr. Thomson was not able to leave Téliko till the afternoon on Thursday the 2nd of June. After travelling for an hour and a quarter he passed the river Téliko, and, 10 minutes further on, the Mamu, which divides the province of Téliko from Timbo. In less than 2 hours more they passed the rock of Kúmi, near which the country, previously hilly and wooded, is in a beautiful state of cultivation. They reached Kúmi; near which a celebrated battle was fought, at half-past 4 p.m., and at 9 p.m. they crossed the Kúmi river, a tributary to

* The Mihráb, or recess, which points out the Kiblah or direction of Mecca.

the Upper Senegal, and at half-past 10 P.M. reached the Marráka, or farm-village of Abu Bakar, the Imám's eldest son, all in beautiful order, and well fenced. He was a scholar of great reputation, and had a large collection of books. His house was neat and clean, and a model for country houses. Here the travellers passed the night; on the following day leaving it, at half-past 11 A.M., they reached Dindáya in rather less than an hour. There they passed the remainder of that day and half the next, being, as usual, detained for want of carriers.

At 3 o'clock in the afternoon of Saturday the 4th of June, they crossed the Ba-Fing, or Upper Senegal, 20 yards wide and more than 3 feet deep, even when the dry season was so much advanced. It is there navigable by small steam-boats. They crossed by a native wooden bridge 20 feet long and about 3 broad, without any rail or support. The source of this great river is only half a day's journey to the E. in a large spring not 7 miles from its junction with the Wankako, which they crossed at 7 P.M. It receives many small streams from the neighbouring hills, and soon attains a considerable size. At a quarter-past 8 P.M. they at length reached Darah, the Imám's residence, where houses had been prepared for them. That village is only 4 or 5 miles from Timbo, the capital of Futa Jállo.

Mr. Thomson had now, therefore, completed one great object of the mission on which he was sent, and, as it afterwards appeared, the only part which he was destined to finish. When we contemplate the difficulties which he surmounted, the privations which he endured, and the example of unwearied perseverance and conciliatory expostulation by which he baffled the prejudices as well as arts of the native chiefs, we have the more reason to admire his prudence as well as firmness, and to lament the irreparable loss sustained by the colony in his premature removal from his benevolent labours.

III.—*Further Explanations in reference to the Geography of N'yassi.* Addressed by W. D. COOLEY, Esq., to the Secretary of the Royal Geographical Society.

SIR,—As the 'Annaes Maritimos' for 1845, which contain the sequel of Lacerda's journal, have just reached me, and I presume that you feel interested in whatever tends to substantiate the speculations which have appeared in the Society's Journal, I hasten to send you a brief account of that traveller's observations and remarks, as far as they bear on my investigations into the geography of N'yassi.

It appears that Lacerda's observations placed Quilimane at the

mouth of the Cuama, some miles to the W. of the position which it holds in Captain Owen's charts. Sena too stood, according to the former, 41 miles from the position assigned to it by Lieutenant Browne. An island in the river, two-thirds of the way up from Sena to Tete, was found by Lacerda to be in lat. $16^{\circ} 30' 58''$ S. Respecting the position of Tete he is quite silent; but Mashinga, 3 days' journey N. from that town—or perhaps 40 miles, the day's journey varying from 10 to 16 miles, within the bounds of the Portuguese settlements in Africa—he places in lat. $15^{\circ} 19' 15''$ S. In the course of his march up the country he determined by observation the positions of two places nearly 200 miles apart, viz., Mazavamba, 2 days' march S. of the Aruangoa, in long. $32^{\circ} 18' 11''$ E., lat. $12^{\circ} 33'$ S.; and Moiro Achinto, in long. $30^{\circ} 1' 41''$ E., lat. $10^{\circ} 20' 35''$ S. Advancing from the latter place he arrived, after a forced march of 7 days, at Lucenda, the Cazembe's capital; which town will therefore stand—if we suppose the route continued in a straight line, and allow 10 miles a-day for the forced march, the average rate in the level country being under 9—nearly in long. $29^{\circ} 15'$ E., lat. $9^{\circ} 30'$ S.

Thus it appears that in my delineation of the route from Tete to the capital of the Cazembe I have fallen short of the truth by about 150 miles. This abridgment of the real distance is attributable chiefly to the following causes:—

In the first place, it is distinctly stated by Major Monteiro, who conducted the expedition to the Cazembe's country in 1831, that his course throughout was to the N.E. Now, though I was fully convinced that the Cazembe's dominions lay towards the N.W., and not N.E., from Tete, yet I felt that I would not be justified in rejecting wholly the testimony of one who had actually travelled the route in question. I was, therefore, under the necessity of supposing that the earlier part of the route inclined to the N.E., and that the whole had a circuitousness which is faintly indicated rather than fully represented in my map. Hence it is that two-thirds of the whole deficiency in direct distance lie between Tete and the Aruangoa, within which limits I felt myself bound to admit a north-eastward bending of the route.

Secondly, it was my intention to indicate direction as plainly as possible, without pretending, in the absence of adequate data, to fix positions accurately. But by abstaining from extending towards any quarter, arbitrarily and merely for the sake of verisimilitude, an imperfectly described route, I necessarily brought it nearer to a straight line than I should have done had I aimed at more than the establishment on solid grounds of certain general conclusions.

But though I have missed *the exact points*, you will, I trust, see sufficient proof of the general soundness of my reasoning in the

fact that I have hit on *the exact line*: for, the difference of longitude between Lacerda's route and that marked by me, is no more than what exists between us at the starting point; and if I had taken the coast-line in my map from Lacerda's data, and not from the English charts, that difference would have vanished, and my delineation of the route, so far as it goes, would have coincided completely with his. Besides, when it is considered that the longitudes obtained by Lacerda for Mazavamba and Moiro Achinto depend each on a single observation of the immersion of one of Jupiter's satellites, and that he, suffering from fever, cannot be supposed to have been during his journey in a condition to attend to the rate of his chronometer, it will be easily admitted that the difference between us in longitude lies completely within the limits of errors.

Now, in hitting correctly on the line of the route from the Aruangoa to Lucenda, I succeeded in what was most essential to my purpose. For my especial object was to prove the existence of the lake called N'yassi, and to fix approximately its position; and I supposed that the route in question went parallel to its shores, and at a distance from them of about 50 miles, presumptions which are much strengthened by the information now before us. But before I insist on this point, let us glance rapidly over the chief results of Lacerda's journey.

On leaving the district of Bive, in the kingdom of Unde, which adjoins the Portuguese possessions, he entered the territories of Mocanda, watered by the rivers Ruy, Bue, and Uzereze, which run, not westwards, into the Aruangoa, as I had imagined, but eastwards into the Shiri, and which may be supposed indeed, with much reason, to be the chief sources of the latter river. The nation of the Mutumbuca extends from Mocanda to the Aruangoa. This river was found not to be navigable at the season (the end of August) when Lacerda crossed it. On its northern bank, and close to the water, were large trees, the first seen on the journey. The tracks of elephants also now grew frequent. At a little distance beyond the Aruangoa begins the naked and rocky country of the Moviza, which extends to the New Zambezi; where, says Lacerda, "terminates the famished land of this frizzled and periwigged people." The principal chain of hills in this tract extends from the lake south-westwards, and is called Muchingue. At the New Zambezi commence extensive plains, frequently intersected by lagoons and marshes, and comparatively well peopled. The town of Chipaco, three days N. of the Zambezi, appeared to Lacerda to be of great size. Between Moiro Achinto and Lucenda is a wild and desert tract of rugged table-land, with intermingled fens and woods, in which the height of the trees reminded Lacerda of the forests of Brazil. In the middle of this

tract, or about 4 days from Lucenda, he was told by a Caffer that "on the left was the great lagoon, which he (the Caffer) and Pereira had crossed on the previous journey"—"perhaps," adds Lacerda, "a continuation of that near which I halted at night; they say that they take in it much and large fish." The woods here were without game, and the villages in the vicinity were deserted on account of the lions. On the 2nd of October Lacerda was dissuaded by the Cazembe's messengers from approaching close to the town. On the following day he was requested to visit the tomb of that chieftain's father. Here his journal terminates. On the 18th he expired, worn out by the fever which had been so long consuming him.

In the dispatch written by Lacerda just before he started on his journey, and which contains the information collected from Pereira and the Moviza respecting the interior, he states that "the (New) Zambezi flows towards the right hand with respect to one going from Tete to the Cazembe." Again, when speaking of the lagoon above alluded to, which it took Pereira a whole day to cross, he tells us that "its waters pass off by two channels, one communicating with the Zambezi, the other with the river Murusura, on the banks of which dwells the Cazembe." He then goes on to relate, on the authority of the Moviza who trade with the Miyáo, "that the Murusura, which is 3 days' voyage in width, passes behind the hills of Morembala, and is the same with the Shiri." But when he arrived at the New Zambezi, he found it flowing towards his left hand; and on inquiring as to its course, he was told by the natives that "it runs into the river which flows nearest to the Cazembe's town," that is to say, into the Luapula. Lacerda here makes some bitter comments on the stupidity of Pereira; but, in truth, the creole's statement, if we suppose it meant to describe the *ultimate* course of the river, is perfectly correct, and moreover, it is freed by this mode of interpretation from a difficulty of no little weight; for the expression, "the Murusura, on the banks of which dwells the Cazembe," though applicable to the Luapula, is only calculated to confound us if applied to N'yassi. When Lacerda says that "the Zambezi joins the Murusura a long way *below* the Cazembe's town," we must bear in mind that he totally misconceived the course of the Zambezi, which, in fact, joins the Luapula, not *below*, but *above* that town, or else we must suppose that he meant to speak of the junction of the Luapula with N'yassi. As to the great lagoon crossed by Pereira, and the situation of which was pointed out to Lacerda, it is evident that it lies between the Zambezi and the Luapula, not far from their junction. It is probably the Carucuigi of Pedro, and the suspected continuation of it, near which Lacerda halted, is the Luena or Ruena. Perhaps too the channel or drain, which con-

nects it with the Luapula, may be no other than the Mouva, the river or marsh which covers Lucenda on the S. The present site of the Cazembe's town was chosen, we are told, for its strength, and it is manifest that the advantage of the position consists wholly in its being protected on all sides by deep rivers, marshes, or lagoons. The tract through which the New Zambezi flows appears to have been wholly under water at a recent period, geologically speaking, and perhaps it is one of several parallel depressions, the lowest and easternmost of which alone, receiving the waters of the others, still retains its original character of a lake.

It is remarkable that Lacerda, when on the banks of the New Zambezi, and desirous of learning something of its course, did not apply for this purpose to the Moviza. "I sent to-day," he writes, "to make inquiries of the Mussucuma, (these people are mingled in small number with the Moviza on this side of the Zambezi, some of the nation are subject to the Cazembe, others are independent,) as to the course of the Zambezi, and they all agree in saying that it runs into the river which flows nearest to the town of the Cazembe." At Moiro Achinto he wrote the following passage:—"The Caffers tell me that to the N., between the Mussucuma, who reach to the banks of the Shiri or Nhanja, and the Moviza, are the Uemba, who, as well as the Mussucuma, are deadly enemies of the Cazembe's nation." It is obvious that the Nhanja here spoken of is N'yassa or N'yassi,* hypothetically identified by Lacerda with the Shiri. The Mussucuma occupy its shores towards the mouth of the Luapula, yet they are not so remote but that they seemed to Lacerda to be most likely to be well informed respecting the course of the Zambezi, which flows on the W. of the Cazembe's territory. On the other hand, when we consider the magnitude of this river (it was 50 yards wide and 1 deep in the dry season) where Lacerda crossed it, and that its sources were on his right, we must conclude that in this latitude the shores of the lake must have been at least 40 or 50 miles distant. Thus we have additional grounds for supposing that the general direction of the lake is parallel to the ordinary route from the New Zambezi to Lucenda. And since I have measured the routes on the eastern side of the lake, and which lead directly to it, by the same standard, which, when applied to the routes on its western side, running parallel to its shores, is found to fall short of the truth, it is highly improbable that the lake can be situate further to the E. than I have placed it. Its position, therefore, must be considered as approximately determined.

* Nasib said indifferently, N'yassa, or N'yassi. The *nh* of the Portuguese is equivalent to the liquid *n* of the Spanish, for which I use *n'y*. Nhanja for N'yassa exhibits the same analogy as the Luaozege, Hiambege, and Lucunzie of Pedro, for the Ruazeze, Zambezi, and Lucuze of Lacerda.

We are informed by the Conde de Sá da Bandeira that Captain Gamitto, who was second in command in the expedition of 1831, says "that geographers erroneously give the name of Lake Maravi to the river, which is properly called Nhanja Grande, and which flows into the sea not far from Zanzibar" (Annaes Maritimos, 1844, p. 211). In this sentence we find the hypothetical connexion between the lake and the river Shiri, impliedly yet completely negatived by one who, going north-eastwards from Tete through the country of the Muzimba and Muchiva, had an opportunity of becoming acquainted with all the affluents of the Shiri, and who must have passed near the southern extremity of the lake. In the "*Nhanja grande*, erroneously called Lake Maravi," it is easy to recognise the *Great Sea* or N'yassa of the Miyáo; and as to its entering the sea near Zanzibar, that statement is evidently but an echo of the opinion prevalent on its eastern side, and which I have already discussed, that the Lufigi issues from it.

If from Mazavamba, the position of which was determined by Lacerda, we retrace his route agreeably to the indications which he has given of his course, we shall find Tete to stand in relation to Sena exactly as I have placed it.

It deserves to be mentioned, that Lacerda has left us some observations of the magnetic declination, or, as it is commonly called, variation, from which may be deduced the following interesting conclusion, namely, that in his time (1798-9) the lines of equal declination in the Rios de Sena lay in the same direction (S.E.—N.W.) and at the same distance asunder (about 90') as at present, while the absolute amount of eastern declination has diminished about 2°.

I trust that what is above stated will suffice to dissipate all doubts as to the existence of the great lake called N'yassi, and to prove the reasonableness of my inferences respecting its position.

IV.—*Note of a Journey from Cape Coast to Whyddah, on the West Coast of Africa.* Being a letter addressed to the Librarian of the Royal Geographical Society, dated 19th April, 1845. By Mr. JOHN DUNCAN.

I AVAIL myself of the opportunity of sending you a few hurried lines detailing my late adventures, and my expectations for the future.

When I last addressed you I had made up my mind to proceed to the river Volta as soon as any man-of-war bound to leeward should visit Cape Coast. The Penelope war-steamer was daily expected; and her commander, Captain Jones, when last at Cape

Coast, kindly tendered his services to me to take me to any part of the coast I felt inclined to visit; but owing, it is supposed, to her having captured a good many slavers, her return was delayed for four months. In the meantime an opportunity offered for a passage in the *Medora* (a vessel belonging to Mr. Hutton), by which I profited, and was thus enabled to visit all the settlements on the coast between Cape Coast and Whyddah, full details of which I have entered in my journal, which I shall forward by the first opportunity. At present I will give you only an outline. On the 30th of January I left Cape Coast, and on the 1st of February we anchored in the roads off Winnebah, a town on the coast between Annamaboe and Accra. This town has some trade in palm-oil and ivory, and is an excellent place for fish—the shark, which is here very numerous, being used as commonly as the more delicate fish. On landing I proceeded to the mission-house, where I fortunately met Mr. Chapman, missionary from Ashantee, and Mr. Brooking, from Annamaboe, who were returning from a visit to Accra. Mr. Hutton and myself were just in time for breakfast,—the missionaries thus always receiving me with every mark of kindness. I remained at Winnebah until the 5th, and had an excellent opportunity of penetrating some distance into the interior, and examining the soil and vegetation. It is a beautiful country, and for 10 miles northward resembles a gentleman's park in England; it is richly studded at intervals with clumps of trees and aromatic shrubs, mixed with a beautiful scented jessamine. This plain is bounded by a chain of mountains, commencing with the Devil's Hill to the westward, and forming a crescent to the N. and E. I shall send you a full description of the town, trade, and produce in my journal.

On the 5th of February sailed for Accra, where on the following morning we arrived, and were kindly received by the merchants, each offering me accommodation. I accepted the invitation of Mr. Gedge, an English merchant. During my stay I visited some of my old friends with whom I became acquainted on my visit with the Niger Expedition.

At Accra we remained six days, where I made many general observations, which I have carefully noted. I had also an opportunity of visiting Danish Accra. The Danish governor, whose acquaintance I made at Cape Coast, received us with a hearty welcome. Part of the town was in ruins, having been destroyed by order of the governor to punish the natives for their treachery, to which they are very much addicted all along the coast.

February 11th we sailed from Accra for Ahguay; on the 12th we were boarded by the *Cygnat* brig-of-war, and on the following day by the *Star*, both stationed on this coast; and on the 14th we anchored off Ahguay. Having landed, I accompa-

nied Mr. Hutton to his new factory. At this place there are a great many Spanish and Portuguese slave-dealers, as well as parts of the crews of slavers, who have been put on shore here, and amongst whom are most of the crew of the far-famed Malveira, long known as one of the most lucky slavers ever trading on this coast. She was lately run on shore by the Cygnet, and completely destroyed. She had no slaves on board at the time; there were 400 ready for shipment; she had made several successful trips with the same number. It is the boast of her former captain that when hard-run by a man-of-war he has killed his whole cargo of slaves during the night, and thrown them overboard, as well as all other things belonging to the slave-trade, to prevent a capture. A large ship of great tonnage and sailing qualities, in order to compete with H.M. cruisers, is now building here.

The cabbareer and chief captains, with their Fetish men and women in the most disgusting costumes, turned out to pay their respects to us. They formed a most extraordinary group, firing muskets and uttering the most hideous yells, accompanied with clumsy dances. After being annoyed for about three hours with this grand reception we were permitted to rest without any further molestation, with the exception of some few reconnoitring our luggage to see what they could steal.

On the following morning we were assailed by a whole host of the chief captains, begging payment for the civilities of the previous day, asking for rum, and declaring their devoted friendship; but, from my experience, I am well aware that an African's real friendship extends very little beyond himself. I am afraid that many errors have arisen in the estimation of the African character, from casual visitors to them being well stocked with everything necessary in the shape of *dashes* or presents to distribute among them: while the presents last they feign the most devoted attachment. But circumstanced as I am, with only sufficient to pay my way, I have an excellent opportunity of estimating the true character of the African, on this coast at least. After a stay of two days at Ahguay, we sailed up the lagoon, which runs from W. to E., to Popoe, a distance of 8 miles from Ahguay. At Popoe we visited Mr. Lawson, a native of Accra; he is an old man with a number of young wives. He and two sons represent themselves as general merchants, and hoist the British flag, while they are themselves the greatest slave-dealers on the whole coast; they actually kidnapped my own servant, who had run away from me when I detected him thieving. Lawson is remarkably kind, or at least pretends to be so, to all Englishmen, and gives H.M.'s cruisers information when the Spaniards or Portuguese are shipping slaves: at other times he gives false information to get the men-of-war out of the way when he himself ships slaves.

After visiting the principal slave-dealers, and inspecting the town, and the soil and produce of the neighbourhood, I returned to Lawson's, where I remained all night, and where I was annoyed by the same sham civilities as at Ahguay, to which place we returned on the following day.

At both Popoe and Ahguay a considerable quantity of cotton is cultivated and manufactured into cloth. Indigo is also cultivated; and lime of an excellent quality is manufactured from the oyster-shell. A considerable quantity of salt is made, both by drying in pots and by evaporation by the heat of the sun, which ranges at this season from 78° to 90° Fahr. [On the 14th instant (April) at 5 P.M. the thermometer fell suddenly during a tornado from 90° to 71°, the most sudden and the greatest change I have yet seen in so short a time on the African coast; the thermometer also fell during a tornado on the 19th of April from 84° to 76° Fahr. between 7 and 8 o'clock in the morning.]

On the 18th of February we started again from Ahguay, by the lagoon which runs just behind that town and Popoe, about half a mile from the sea, to proceed to Whyddah. We commenced our journey at 8 P.M. The lagoon or lake is beautiful, and is in some places very picturesque; its banks are at intervals covered with trees of various kinds, amongst which are numerous cabbage-palms, mangrove, and a species of beautiful laurel; at other places it is not wooded, but has plantations of cotton, indigo, yams, Indian corn, &c. The lake abounds with fish and waterfowl, and there are great numbers of alligators.

Canoes are propelled by long poles, with four men to one large canoe; the river varies from 3½ to 10 feet in depth. Myself, with luggage, and boy as servant, occupied one canoe; and Mr. Hutton, and Mr. Hanson his agent, another. My canoe, being lighter than the other, moved considerably faster than it, and I arrived at the toll-bar across the lake some time in advance. This place is named Little Popoe, and is the usual resting-place for the canoe-men passing up and down the lagoon with goods, on which a toll is imposed.

While waiting here for Mr. Hutton's coming up, a very large canoe arrived from Whyddah, in which were several Spanish slave-merchants, accompanied by a number of young slaves, apparently between 12 and 15 years of age; the canoe stopped some time, the Spaniards kindly presenting to me the contents of their can-teen, which was well stocked. I accepted a cigar, when they bade me good night, and proceeded. Mr. Hutton's canoe having arrived, we remained half an hour, and again started,—the moon still bright, and the river beautiful. At daylight we found a change in the appearance of the banks, which were now closely wooded with small mangroves, the roots and some of the trunks

being covered with oysters. I have often heard of oysters growing upon trees, but here they were in reality; the bed of the river was also covered for several miles with oysters, some very large, although the flavour is not so good as in England. At 10 o'clock A.M. we arrived at the ferry across the lagoon, where the road leads to the town of Whyddah, 3 miles distant from the ferry. The first object seen, close to the ferry, is the gibbet of three natives, who murdered a white man on the lake, and robbed him of 5000 dollars.

Having landed at this place, we proceeded to the town of Whyddah, carried in hammocks through the swamps. In three-quarters of an hour we arrived at the old English fort, partially repaired and occupied by Mr. Hutton as a palm-oil factory and store. On the following day we were visited by all the principal Portuguese and Spanish slave-dealers: a great contrast to the native African—the latter using every endeavour to rob you, and the former to show their hospitality and kindness; for, although slave-dealers, the Spanish and Portuguese are the most kind and liberal people I have ever met with. As an instance I will mention that Mr. De Souza, one of the greatest slave-dealers on the whole coast of Africa, has behaved in the kindest manner to me, and has proffered his best services for my introduction to the King of Dahomey. I have already received a message from the King of Dahomey, expressing his willingness to allow me to pass through his kingdom to the Kong Mountains: this concession is entirely through the influence of Mr. De Souza.

I have been remaining here for some time, awaiting the king's return from the war, as it is called, although in reality it is nothing more than a slave-hunt; those captured are called prisoners, and all who are saleable are sent to the slave-market and sold to the best bidder; while those who are too old, or deformed, are detained for sacrifice at the great annual custom, at which I expect to be present, as Mr. De Souza will very shortly go up to the capital with all his retinue. Mr. De Souza has as much, if not more, influence than the king himself, therefore I shall have an opportunity of getting ten times more information than I otherwise should; this opportunity is too good to let slip.

I have been making myself some comfortable and suitable shoes for the climate, my boots being much too hot for the country. I have also been fortunate enough to get a horse, upon the condition that I break him in and teach the blacksmith how to shoe him; the poor animal was nearly starved, but is now quite strong, and handy as a troop-horse; he is too small for my weight, but I expect that, by walking half the journey, I shall manage pretty well. Unfortunately, you cannot trust a native to feed your horse, as he has no affection for the horse, or any other dumb animal.

This a very splendid country for agricultural purposes; for many miles behind the town the country is very level, the soil rich red loam, and not a stone to be found, nor any change to the depth of 20 feet. The soil will raise anything they plant upon it; but the people are indolent, even the domestic slaves scarcely perform sufficient labour to keep them in bodily exercise. De Souza's slaves work only when they please; they are well fed, and are all reckoned as his family: any English labourer performs more work than fifty of them; they are to be seen, all over De Souza's premises, basking in the sun like so many snakes.

The snake which is worshipped here is a species of boa constrictor: snake-houses are built in different parts of the town for the reception of these snakes, and are of a round form, about 8 feet diameter, with two doorways but no door; the roof is conical, like a small corn-rick. The snakes are placed on the top of a wall, where they coil themselves up until hungry, when they crawl out in the night, and are generally picked up in different parts of the town; the natives being subjected to a heavy penalty if they are known to pass one without taking it up and carrying it to the snake-house; even the carrier of a burthen on his head must instantly lay it down and attend upon the snake. In its progress back to its house you will often see old persons prostrating themselves and begging to be rubbed over by it.*

At certain times of the year a large species of vampire-bat visits this place, and remain about a month; they fly in large parties, like rooks, and suckle their young like the monkey. They are when full grown from 34 to 36 inches from point to point of wing; they are considered to be the largest in the world. It is said their bite, which is as sharp as that of a cat, is very dangerous; but, although I have had several bites, I have felt no ill effects from them. The breast, when dissected, is very much like that of a woman; their milk is very thick, and their food fruit and insects. I have shot and wounded many—they are very difficult to kill, as they partake of the canine (feline?). When roosting, they hang in clusters close to each other, on a small bough, by their hind feet: their eyes are brown, and very full; they carry a great quantity of flesh, and are eaten by the natives.

The laws, manners, and customs of Whyddah, though arbitrary

* Lord Kames, in his "Sketches," describes these sacred snakes of the Whidans, and says it is a capital crime to kill them. He adds, moreover, that "in the year 1697 they gave occasion to a ridiculous persecution. A hog, teased by one of them, tore it with his tusks till it died. The priests carried their complaint to the king, and no one presuming to appear as counsel for the hogs, orders were issued for slaughtering the whole race. At once were brandished a thousand cutlasses, and the race would have been extirpated had not the king interposed, representing to the priests that they ought to rest satisfied with the innocent blood they had spilt."—(Ed.)

and absurd, are full of interest. My time will not permit me to give you the details at this moment.

In my last letter I informed you I intended to make an attempt to ascend the Volta river, which I have done, but when we reached the outside of the bar at the mouth of the river it was found impracticable to cross it in a canoe; the natives stating that such a thing had never been before attempted. I found that the only way of getting a canoe into that river was by landing either N. or S. of the Volta, and carrying the canoe to the Volta inside the bar. As the prospect of reaching Dahomey was much brighter by starting from Whyddah, I seized the opportunity of accompanying Mr. Hutton, as I have already detailed to you.

March 5th.—I again travelled, by lagoon, from Whyddah to Ahguay, where I arrived this morning, only a few hours too late to witness the shipment of 400 slaves, three of whom were drowned passing through the surf; the vessel was captured by the Hydra steamer the following morning.

As Mr. Hutton intended returning to Cape Coast as soon as possible, he determined travelling by lagoon as far as Porto Sagoora, nearly 1 day's sail by canoe, to the westward of Ahguay. We accordingly embarked in a large travelling conoe, and reached Porto Sagoora at six in the evening. Mr. Hutton then proceeded by land to the Volta; I arranged to proceed up the lagoon into a large lake, 6 miles long by 5 miles broad. Two rivers run into this lake at the N. end, one from the W., the other from N. by E. Being of opinion that one or both these rivers were partly fed by the Volta, I applied to the cabareer of Porto Sagoora for canoe-men, and he readily granted my request; I had also two more volunteers, one of whom had formerly been a servant to Captain Clapperton, the other was an Accra man; besides two boys, one of whom had been servant to Governor Hill, at Cape Coast, and could speak English. It appears that this boy, while on a journey to see his brother at "Little Elmina," had been kidnapped and sold at Popoe, to Lawson, who was afraid to ship him, knowing he spoke English, he therefore exchanged him to the cabareer for two others; the poor fellow was pleased to see me, and begged me to get him released.

Having mustered my people, we commenced our cruise into the lake, visiting several towns, and a very large market on the eastern border, where we remained some time to procure some kaukie, a bread made of the Indian corn; the people, never having seen an European or white man before, left their goods, and thousands of men, women, and children came into the water as high as their middle to see me. The excessive heat of the sun, the number of persons round the canoe, together with the offensive odour from their persons, rendered my situation anything but enviable;

whenever I moved my head round towards those who had not already seen my face, they retreated immediately. Having made our purchases, we again got under weigh for the mouth of the river, which enters the lake from the N. by E. My canoemen here showed some reluctance to proceed, remarking that no person had ever been up that river, that it was filled with monsters, and that its termination could not be reached in two moons. This made me the more anxious to proceed, and I threatened to throw the first man who disobeyed my orders into the river; they, finding it of no use any longer to hesitate, went to work in real earnest. About 8 miles up, the river deepens to 10 or 12 feet, and from 20 to 25 yards wide; current not more than 2 miles per hour. At 10 miles, its general direction changes to E., and at 14 miles again changes to N. $\frac{1}{2}$ W., and at 20 miles again to N. by E.: here the banks rise a little, and are wooded on each side. Up to this distance not a habitation or mark of a footstep were to be seen; and from the tameness of the pelicans and large cranes on the banks, as well as the numerous alligators, I concluded they were seldom disturbed. At intervals the rhinoceros was raising his head above water—one, very near the canoe, so alarmed the men that they refused again to proceed any further. I was compelled to knock one of them into the river, but as he earnestly begged to be taken in, promising to go anywhere I thought proper, I allowed him to return to his duty. We still held on our way; we found these ponderous animals more numerous than pleasant: it was now getting dark, and I determined to remain for the night at the first kroom or village we might arrive at. The moon now shone brightly, and on the left bank I perceived a track resembling a footpath, here we landed, and found the marks of a recent fire; I concluded from this that some village was near, but our search proving fruitless, we again embarked and pushed on for 2 miles, where we were agreeably surprised by seeing a large fire on the right bank of the river. On our nearer approach we found we were in rather an unpleasant situation, as seven men and a number of boys stood near the fire, the former with muskets presented. On my hailing them they put down their muskets, and received us apparently in a friendly manner, as we landed and sat down. My volunteer Ithay Batho, Clapperton's old servant, taking care to remain near me, I gave him charge of one of my double-barrelled guns, retaining the other myself, and my sword (which is a great terror to the natives). We remained some time in conversation with this fishing-party, whose traps are set in the river like eel-traps in England, and I then retired to my canoe for the night. My two boys also soon returned to the canoe, having overheard a conversation between my canoe-men and the fishermen, to the effect that they were

determined to proceed no further, but to remain at this place, and allow me to go alone as far as the town, one of the fishermen to be my pilot to the town, who would give me up to the cabareer, and, in the event of my not paying a heavy toll, the cabareer would seize my luggage and canoe. This information gave me time to arrange my plan: I was determined not to yield one point to the villains, let the consequences be what they would. In the morning, as soon as we had breakfasted, I ordered my crew all on board; the canoemen insisting upon returning down the river, I drew my sword and drove them in an instant out of the canoe, the other four men being willing to go wherever I chose; I ordered the canoe's head to be turned down stream, leaving the canoemen in the hands of the native fishermen, who had seized upon them as slaves. Thinking I was going to leave them, they raised the most hideous yells, begging me to take them on board; I was, however, determined to give them a fright, and did not return for some minutes, and when I did so the fishermen claimed them as their slaves, as I had sent them ashore. The canoemen were very urgent to be again received on board, promising the strictest obedience; I ordered the bow of the canoe to be run against the bank, and with my sword in my right hand and my gun in my left, with the second gun close at hand when wanted, I sprang on shore. All the seven had their muskets presented at me, but as they fire from the hip, and had moreover their lock-covers on (made of raw hide), I had no apprehension of the consequences. I directed old Ithay to inform them that I would blow out the brains of the first man who attempted to remove his lock-cover. Striking the oldest of the party on the wrist with the back of my sword, he instantly dropped his musket, prostrating himself on the ground to beg for mercy, and the others followed his example. The canoemen tumbled into the boat any how. To prevent their firing upon us from behind the trees, I broke the lock of the old man's gun, which seemed to distress him more than his bleeding arm; the other six muskets (Danish), I told Ithay to dip into the river, which he readily did, and returning the six guns to their owners allowed them to depart. They jumped into their small canoes and were off up the river as quick as possible. The old man I detained to pilot us up to the town; we proceeded about 2 miles higher up towards the town—the old pilot, no doubt, thought himself all right—when I ordered the head of the canoe to be turned down stream; the old man begged hard to go on shore, but to punish him I took him 4 miles down the river, and landed him on the roughest part I could find. This ended my adventure. At six o'clock P.M. I arrived at Porto Sagoora. The cabareer congratulated me upon my escape, but did not seem at all pleased when I told him it

was all the fault of his own people. My cowries were now all exhausted; the money I had being of no use here. I experienced none of the milk of human kindness which some of our missionaries hold forth as being so liberally bestowed by the natives. I had a small chicken with me when I started on my journey up the Habotia river (the native name, and not known by any other); this chicken, having been with me during my two days' cruise, had become very tame, and I could not think of killing it. I went out and shot two pigeons (which are plentiful, but small) and a fine monkey, which made me and my boy a good breakfast and dinner; the boy preferring the monkey-soup, which I have not yet tasted, but those who have, state it to be excellent.

The following morning, being the fourth from my return from the Habotia, my two friends Hanson and Henriques arrived completely drenched by a tornado; we prepared for our immediate departure for Ahguay, which we reached late in the evening.

On the 15th Mr. Hanson and myself visited a large market-place at a small town called Greegapogie, one of the largest markets on the lagoon until you reach Whyddah. On our return from Greegapogie market we saw several alligators; I shot one about 6 feet long, but he got into the water, and was not secured. Soon after we saw a very large one on the bank seemingly asleep; we got the canoe steady, and I shot him through the upper surface of the hard crust on the back—this proves the fallacy of the supposed fact that a bullet will not pierce an alligator in certain parts of the body; he sprang into the water, but soon put his head above again. My next shot knocked out his eye, and carried away part of his skull, still he was not dead; he got under water, and ascended the stream at least 50 yards, and came again to the surface. One of the fishermen drove three harpoons into him, which, although they penetrated 4 inches, had little effect; I fired another shot through his brain, which finished him, and we towed him to Ahguay. We were obliged to give the cabareer notice to send his men to take out his gall, which is a very strong poison, and it was thrown into the river, in order that it might not be used as such. Every person killing an alligator, and not reporting it for the purpose of having his gall taken out, is considered a murderer, and punished accordingly.

On the 18th, Captain Pearce, of an American trader, and myself started from Ahguay by the lagoon for Whyddah, having with me the horse which I mentioned before as being sent to me. When we had gone 10 miles the horse jumped overboard, and we had great difficulty in again getting him into the canoe; this he several times repeated, and as often had I to jump into the river to get him in again, the natives being entirely useless. When we came to the toll at Little Popoe, we stopped one hour to refresh

the men, and again proceeded, leaving the canoe with the horse to follow; but, instead of following us, the villains in the canoe went up a branch which falls in here from the N., with the intention of stealing him. We gave chase, and overtook them; they ran the boat ashore and run off, but I caught one of them, and I believe he remembers the circumstance. Again the horse got out, and night came on about this time; I got into the canoe to hold him, but it being too small it capsized, and we were both thrown into deep water; we both swam ashore, and I again got him into the canoe, and secured him with a twitch made of my walking-stick and a piece of cord. Having stripped off my wet clothes and put on dry, another difficulty awaited us. It being past 12 o'clock the lower bar was shut, and we were told by the guard that we must wait till the morning; but my temper was so ruffled with the many vexations I had experienced, that I was determined to have it all my own way, and I broke the bar and passed through. The toll-guards came after us with two canoes to take my men prisoners, but I drew my sword and took two of the guards prisoners, and they at last were all very glad to give in. I again arrived safe at Whyddah, thank God, in good health, and in daily expectation of marching to Dahomey and the Kong Mountains; and when I return I am promised a canoe, with which I will again ascend the Hahotia, which I am confident is a branch of the Volta. I have mapped the river Hahotia, from 60 miles up, down to Whyddah, and the lagoon, which I shall send home to you by the first opportunity. I beg you to express my gratitude to all the members of your Society; your instruments are all in good order and safe. Assure all my kind friends that as long as life is in me I shall do my best to merit their approbation.

You say in your last letter to me that you regret my finances being so low, and advise me to keep up a good heart. I feel grateful for your kind advice, but, thank God, as long as my health is good my spirits never fail; this is just the life that suits my temperament; in the midst of difficulty and danger I think nothing of it, and laugh at it afterwards. I still consider myself a soldier on the duty of my country and my friends, and will not leave it until I am starved out; I can even then pawn myself to some king or merchant, and reconcile myself to an African grave. The worms of Africa are quite as modest as those in England, although the people are not.

V.—*Notice of a Journey from Whyddah on the W. Coast of Africa to Adofoodiah in the Interior.* By Mr. J. DUNCAN. Being a letter addressed by the traveller to the Secretary of the Royal Geographical Society, and dated Cape Coast, October 4, 1845.

I TAKE the earliest, though but a brief, opportunity of communicating to you the news of my safe return to Cape Coast after an absence of nearly eight months, and a most successful journey across that part of the Kong mountains called Mahee, and extending about 180 miles E. and W. But as the vessel sails this day for London, I must postpone details till another time.

I believe that in my last letter to Mr. Shillinglaw I mentioned my running down the coast to Whyddah, there to await the King of Dahomey's return to his capital from his annual wars.

During my sojourn at Whyddah I had an excellent opportunity of visiting the people of that and of the neighbouring towns, and observing their manners, as also of ingratiating myself with the most influential individual of the place—Senhor Don Francisco de Suza, of slave-dealing notoriety. He is a Portuguese by birth, seventy-five years of age, and has resided in Whyddah between forty and fifty years. He is, although a slave-dealer, an excellent man, kind and generous to every Englishman. His influence with the King of Dahomey surpasses that of any other person, and I have found him in reality one of my best friends. Suffice it to say, he obtained his majesty's free permission for me to visit his capital, the king saying, "he should be much proud by being visited by one of the Queen of England's soldiers, and would afford me every protection while in his dominions." This message was truly gratifying to me under my circumstances, having been peremptorily refused by the King of Ashantee the passage through his country, though the application had been made by Governor Hill. My determination, however, had already been taken to fulfil my promise to my friends in England, or perish in the attempt.

I now laid out what little money I had left in the purchase of such presents as were suitable to the King and Cabareers, equipped myself in the uniform of the Life Guards, and mounted on a good horse of the country, started on the 6th of June for Dahomey or rather Abomey, where I arrived on the 10th. Here I was received with military honours, and escorted to the best house in the place. On the following morning his majesty sent his compliments, intimating his readiness to receive me in due form. I accordingly mounted *en militaire*, and proceeded to one of the king's palaces, where I waited in the level space in front, and where his majesty's chair was placed. He soon made his

appearance, and took his seat. He was dressed in a plain neat-patterned cotton robe. He rose and bowed to me very gracefully, and then expressed his wish that I would salute him after the English manner. I accordingly advanced slowly with drawn sword, coming to "recover sword" in the advance. The motion pleased him so much that he requested I would repeat it. He then asked me to ride in a circle, and upon my putting my little horse into a canter, his majesty called out lustily for me to stop, sending two men to hold me on, one on each side. But I told him that was not English fashion, explaining to him at the same time that English soldiers fought in a body of many thousand men on horseback, and sometimes singly. This seemed very much to astonish him as well as all the Cabareers, particularly when I performed the sword exercise at a gallop, and he exclaimed, "Now Dahomans may be proud when Queen of England send fine head soldier messenger to see their king on friendly terms. Now he was well pleased and satisfied Englishman be Dahoman's friend." At the same time ordering his soldiers to look at me before I dismounted, telling them I belonged to the queen of all white men in the world, and he himself king of black men, Ashantees not excepted. (Some Ashantees were present who had come to the Custom, begging his majesty to intercept me.)

I then dismounted and advanced towards his majesty, with the Cabareers, my conductors, these latter performing the usual humiliating ceremony of prostrating themselves and rubbing their heads and arms with dust. The king shook me heartily by the hand, welcoming me to Dahomey in the name of the Queen of England, at the same time asking me after the queen's health and family. He then proposed her majesty's health, which we drank very cordially in some good cherry brandy. We then sat down, a seat being provided for me close to his majesty's left, with several men to hold a large umbrella over my head. Then commenced a review of about 6000 female troops, well armed and accoutred. Their appearance, for an uncivilized nation, was really surprising, and their performance still more so. But I must not here dwell upon details, leaving the two following days of the review and the rest of the Custom for the readers of my journal, if it shall be found worthy of notice.

After receiving the most unbounded attention and kindness, with abundance of provisions, till the 17th, the king then furnished me with a guard of 100 men to accompany me all through his dominions, and across the Mahee or Kong Mountains. He had even had the path cleared as well as possible for upwards of 100 miles, and had actually so arranged that at every little kroom and village, provisions were always waiting ready cooked for us; and in towns where we slept, sometimes eighty and ninety large

calabashes were arranged in the market-place. Everything was always presented to myself by the Cabareer, when I made the distribution among my soldiers and people. Their cooking is excellent.

You will perhaps be surprised when I inform you that the Kong Mountains to the N. of Dahomey are considerably out of their true geographical position in the map. These mountains are truly grand and imposing, although they are not what most Europeans would expect them to be. Their first appearance, on approaching from the S., is that of huge ruins of immense stone buildings of colossal proportions. They consist of blocks of granite, marble, and ironstone. On advancing nearer, the appearance changes to that of oval blocks resembling eggs laid on their side: this is particularly the case where one large block is disconnected from the chain or crescent. Some of these blocks are 200 feet high from their base, which is generally a true level without any rise as you approach them. Nearly all the towns are built on the very tops of these mountains, and are constructed of clay carried up the steeps, which are in many cases perpendicular, and ascended by steps cut in the rock. As the inhabitants never think of using stone, their buildings are not proof against musketry, and more and more of these towns are annually becoming subject to the Dahoman government, under whose laws they seem very happy. When a large town is blockaded, the invading party generally station in the night and quietly reconnoitre the place. If the ascent to it be found practicable, the attack is made early the next morning; but if not, their communication is cut off from the contiguous mountains of the chain, and sentinels placed at short intervals round the foot of the mountain to prevent escape. The besieged have great confidence in their poisoned arrows, which are much dreaded; but they are of no avail against the Dahoman muskets. The besiegers generally commence their operations just before the crops in the plain are ripe, so that they have all the advantage of provisions, and their victims become an easy prey.

I have mapped my journey; that part of it which lay among the Kong Mountains was chiefly in a direction E. and W., and I found it a country of great interest to the geologist and botanist. (What a pity all my botanical friends relinquished the journey.) I have noted everything in my journal; the character and dip of the strata, the nature of the minerals, the temperature of the springs, &c.

In consequence of information received from a Mohammedan priest respecting the murder of Park, I travelled to the distance of $13^{\circ} 6'$ N. by observation, and longitude, by dead reckoning, $1^{\circ} 3'$ E. The town called Adofoodiah is of considerable size, with

a large market, where articles from the Mediterranean are exposed for sale, as well as bracelets and anklets from Bornou. Here I met a fine-looking man, a Bornouese, who, to my great surprise, could speak Spanish, and who told me he had been twenty-one years a slave in Bahia, to the firm of Busby and Johnson, of Liverpool; he said he had been head-cook during that period; he signed his name "Warranio, Libertad me dio 15 de Abril de 1825." I also met a Tripoli merchant I had seen at Egga when with the Niger expedition. Amadi Fatuma was, it appears, the principal (cause?) of Park's death. Having complained to the King or Chief of Yaouri that Park had discharged him without paying him his full wages, Park was interrogated upon the subject, and of course indignantly denied the charge; whereupon an attempt was made to detain the canoe, which was at the time moored to the bank by a piece of rope. Park, said my informant, cut off the hand of one of the people attempting to detain the canoe. This was the commencement of the affray, which ended in the traveller's death. This old priest, Terrasso-wea, further states, that about four years after, a white man from Constantinople came in search of Park's papers; that he, the priest, saw this person purchase at a high price a long tin tube with large sheets of paper in it; but that after the purchase the king declared the price too little, and made a fresh demand upon the poor merchant. The books, it appears, were distributed into different hands; many were cut up and sold as amulets, and some were carried to Boussa, where they remained a very long time. Terrasso-wea himself, from having demanded of the king a portion of his pay, which was several years in arrear, had been compelled to leave Yaouri, and has since, he says, travelled over nearly the half of Africa. He is a fine venerable old man, of 65 or 66 years of age, and about 5 feet 10 inches in height. He says that he has been more than twenty times in Timbuctoo, which he describes as not so large as Adofoodiah, and famed only as a great exchange-mart for goods, in consequence of the facilities for transport afforded by thirty-six tributary streams which enter the Niger or Great River within 1 league of Timbuctoo.

I would gladly have proceeded further, or have remained in Adofoodiah a day or two longer; but as I had, accompanied by four people, stolen a march in advance of my main guard at Baffo, the last place of Dahoman authority, and knew that the cabareer, or captain of the guard, was answerable at the risk of his own head for my return to Dahomey, I resolved upon returning.

I cannot now enter into a detailed account of the country traversed. Beyond the Kong Mountains, for the distance of more than 180 miles, it is nearly a perfect level, with the Shea Butter:

tree and Palmstree. Few rivers of any magnitude, or of more than 20 or 30 yards in width, traverse it (they are all described in my journal).

My journey back was extremely fatiguing; but the men were very anxious to return to their comrades. The African is generally a great coward when away from his own locality, or distant from a main body. As I had gone further than I had anticipated, all my cowries were expended, so that, for our subsistence, we were obliged to steal corn and roast it; it was nearly ripe, and made a very excellent meal. Near the towns the land is beautifully cultivated, but the country in general is very thinly peopled.

Upon my return to Baffo I was received by the guard as one risen from the dead. After starting in search of the old priest, I had sent my fifth man back to Baffo to say I was only gone as far as the Dab-a-dab mountains to see a friend of mine, who I knew was living there at present, and that I would return in three days. However, when I reached the place, the priest and Tripoli merchant had gone to Adofoodiah, which delayed my return for many days. I forgot to mention that during the whole journey, with the exception of three or four days in the Kong Mountains, I was without bed or bedding.

On starting from Whyddah, I had engaged one of the crew of an American vessel, which vessel had been sold to the Spanish and Portuguese, and subsequently got clear off with 600 slaves. My new man was a French Canadian, according to his own account, and boasted a great deal of his valour and the numbers he had slain. While living at Dahomey I had detected him stealing cowries, although he had my keys to supply himself with anything he required. Upon being reprov'd, he immediately, with a terrible oath, took a tremendous clasp-knife he had suspended by his side, and threatened to assassinate me; but I had now got used to such fellows. I was compelled to knock him down, and with some difficulty I took the knife from him. I then gave him a good horse-whipping and kicked him out; but, although he had boasted so much of his valour, he was afraid to return to Whyddah alone, and begged I would forgive him and take him on, which I at last agreed to. But, being a drunkard, he was seized the first day with fever. I then gave him my horse to ride until we arrived at Baffo, whence, as I saw it was hopeless to take him any further, I sent him back to Dahomey, giving him my cane-bedstead and bedding, as also my umbrella, so that, as before stated, I was now without either bed or blanket; nevertheless my health and spirits were excellent, and my little horse still fresh. We were now returned to the king of Dahomey's dominions, where we had an overabundance of all sorts of provisions, and fruit of every kind, found in the country. The

cabareers of the different Mahee towns presented me with bullocks, goats, fowls, ducks, sheep, and pigeons of a very rare and curious breed.

On the 10th of August I once more returned to Abomey, where I was met by hundreds of people, who welcomed me with drums and gongs as I entered my old quarters. I visited my white servant, who was still alive, but very weak and suffering from dysentery.

I should have stated, that on returning to the Kong Mountains, I had myself been attacked with fever brought on by swimming across a river (which I was frequently obliged to do), and then riding until 10 o'clock at night in the rain, and afterwards sleeping in my wet clothes. However, I took strong doses of James's powder and Jeremiah's opiate, so that I was able to bear up against the fever, and was on horseback every day, although in a very exhausted state. But, on arriving at Abomey, I was quite rid of fever, though somewhat weak from its effects.

I was not destined, however, to get off so cheaply, for a few days after my return to Abomey, the weather being so cold (from 76° to 81° , and sometimes only from 71° to 78°), I again caught a fever which was likely to prove more serious. It may be remembered that, during the Niger expedition, I received a very severe wound in the leg; this wound has been open a great portion of the time ever since, but, upon this occasion, the leg swelled to a prodigious size, turning black all round the wound and ankle joint; this I considered a sure sign of gangrene. For the first and only time, since the commencement of my journey, my spirits now began to fail me: I was here alone with no one to take charge of my journals; and the observations on the latter part of my expedition, owing to my fever in the bush, were only still in notes. My success, which I knew was far beyond the most sanguine expectations of my friends, as well as my own, was now, thought I, to terminate here. A man learns to value his life but little; but, looking upon myself like a soldier on despatch, the idea of being prevented from executing to the full the wishes of my kind friends, weighed heavily upon me. I, however, derived some consolation from the reflection that if God thought proper to cut short my career at this period, my good and generous patrons would feel satisfied with my exertions. Under this impression I determined to watch my leg, and, in the event of any sudden change for the worse, to attempt amputation. I had seen several operations of that nature performed, and was provided with some surgical instruments, and others for dissecting birds, which might serve the purpose. I had given instructions to my black interpreter what he should do in case of my fainting, though in all probability his first care would be to take all he could get.

By poulticing, however, and keeping the leg in a horizontal position, the swelling was subdued and the wound sloughed; all the discoloured flesh in it came away, which afforded me great satisfaction. The fever was also abated; and, although the wound was a large one, and in a bad part (the tendon Achilles, at the lower part of the calf), yet I could manage with a stick to hop to the king's house, as we had a good deal of business together after my return, and a long conversation on the slave trade.

After many interviews, the king reluctantly consented that I should appoint a day for returning to the coast. The following morning, just as I had got carriers nearly ready to convey my white man to the coast, he died, without the slightest appearance of pain. I was scarcely able to attend and read the funeral service, which, however, with great exertions, I accomplished. This was the third European I had lost since my arrival on the coast, all through their own imprudence. The king gave me a fine country cloth to cut up to wrap him in, and a dollar of cowries to the grave-diggers, besides a quart of rum.

Two days after, his majesty sent for me to bid him good bye. He said he would always like to have Englishmen in his country. He spoke very frequently and warmly of Mr. Freeman, and inquired very anxiously when I thought he would return. After every assurance of a lasting regard for myself, and satisfaction at having had the honour of seeing one of the Queen of England's soldiers, we parted, with a cordial shake of hands and the firing of muskets, till I reached my house.

His majesty sent by Wyho (the English man's father, as he is called) 28 dollars of cowries and two kegs of rum to pay my expenses to the coast. He also sent me four fine native cloths, worked in the palace, one of which he directed me to put on my bed on my passage to England, as he understood it was cold on the sea.

In a former part of my letter I mentioned the presence of an Ashantee prince with his followers, and perhaps you are aware of the King of Ashantee's refusal to allow me to pass through his country, although the application was made by Governor Hill, who interested himself *much* in my favour. On the occasion of that refusal, the Governor replied to the King of Ashantee, that I would go to the Kong Mountains in spite of him, and that he was not to think his paltry country was the only way to those mountains; that I would go by Dahomey, where the king was a good and honourable man, and that I would pass without interruption. Upon this, the king of Ashantee sent one of his sons with his retinue and a gold-hilted sword as a present to the King of Dahomey, to induce him to intercept me. But the sword did not prevail against my interest. His Majesty stood up, showing

the sword, and declared that it should never induce him to do wrong to an Englishman. His father's first and best friend, he said, was an Englishman, and he should always be proud to boast of having them in his country, and would always be proud to have the honour of protecting them while one of his soldiers existed. I, of course, thanked his Majesty in the name of the Queen of England and her subjects. This Ashantee envoy had the impudence to tell me that Englishmen only came to Ashantee to get what they could out of his father, and that if his father had no gold dust he would have no presents from England. I felt a little nettled at this, and answered him accordingly. During the whole of the Custom, a good mahogany table was always laid for me in the court-yard, well furnished with choice cordials and plenty of provisions. No attention was paid to the Ashantee prince nor to the Portuguese nor Spaniards. The Ashantee laid in the dirt.

I shall now venture to offer a few words on my present condition. When I left Abomey, my presents were all exhausted; for I could not leave so noble and generous a man as the king without giving up the last disposable article. Myo, one of the king's head men, had also shown me such extreme kindness, that, in token of gratitude, I pulled off and presented him with my best coat, which the worthy man declined accepting until I should have reached Whyddah, from whence I sent it to him by one of the king's four messengers who had accompanied me on the road. On reaching Whyddah I was weak and greatly reduced, both from the effects of the fever and from anxiety respecting my animals on the road, and, as soon as I entirely laid myself up on account of the wound in my leg, I became worse. The captains of several of her Majesty's cruizers kindly volunteered to give me a cruize for the benefit of my health; but, having brought with me down to the coast, from where no European had ever been before, 10 fine bullocks, 11 goats, 2 sheep, 5 guinea fowls, 5 rare ducks, 11 very rare pigeons, and 16 domestic fowls, also of a rare breed, I could not leave them. Captain Lee, of the 'Jane' of London, kindly gave me a passage from Whyddah to Cape Coast, where I now am with all except the bullocks. I am at present the guest of Mr. Hutton. It is needless to endeavour to conceal the depressed state of my finances; but I beg you will not surmise for a moment that I communicate this with a view to obtaining more pecuniary aid than I have already received. My only anxiety is, will my kind patrons be satisfied with what I have done. Nothing would give me greater pleasure, after recruiting a few months, had my funds been adequate, than to have taken a direct line from hence, passing to the left of Ashantee to Timbuctoo, ascertaining the

true sources of the Niger, and following that river down to Raba. But now for a time I must be silent. Thank God I am much recovered in health.

* * * *

I have just seen Mr. Freeman, who has delivered to me Sir T. Dyke Acland's compliments, and informs me that that gentleman has authorized him to render me pecuniary assistance. I cannot find words to express my gratitude for this; but Sir T. Acland has already behaved so generously, that I cannot think of further trespassing on his liberality until absolutely forced by stern necessity.*

* * * *

VI.—*An Account of the Island of Arguin, on the Western Coast of Africa.* By Capt. JOHN GROVER, F.R.S.

I HAVE collected the following particulars of the island of Arguin from Mr. Northwood, Commander of the barque 'Margaret,' who was detained three weeks in captivity on the island—from Wm. Honey, who was eleven months a prisoner at Arguin and a neighbouring island—and from Mr. Vaughan, commanding the merchant-brig 'Courier.'

Before, however, entering upon a description of the island, I will relate as succinctly as possible the circumstances which led to the captivity of the persons from whom my information is derived.

I find by the ship's log of the brig 'Courier,' that on the 26th of May, 1844, the chief mate, Mr. Wilson, was sent with three hands to take soundings near the island. On approaching the shore they saw a white man, accompanied by two natives, who hailed them in English, and Mr. Wilson immediately landed on the point of the island to assist his supposed countryman. Seeing the boat approach, the natives began beating the white man with clubs; but a gun being pointed at them they fled, and the white man ran to the boat and was immediately taken on board the 'Courier.' He stated that his name was Samuel Phillipps; that he was a seaman belonging to the 'Margaret,' of London, commanded by Capt. Northwood, who, with a portion of the crew, was in captivity on the island, subjected to the most cruel treatment.

Capt. Vaughan immediately determined to attempt the release of his countrymen by ransom or otherwise; he therefore brought

* Funds have since been sent to Mr. Duncan to assist him in carrying out his views of visiting Timbuctoo and descending the Niger.—(Ed.)

up his ship, and anchored on the west side of the island, in 4½ fathoms water, about a mile from the shore. Four Arabs immediately appeared on the beach, and made signs for them to land. On the following morning Capt. Vaughan weighed anchor, and proceeded to the S.W. point of the island, where he anchored in 5 fathoms water, within hail of the shore. The chief mate, with six men, immediately landed, and were kindly received by the natives, who promised to bring down Capt. Northwood and the other prisoners on the following morning to be ransomed. Early the next morning the natives came to the beach accompanied by Capt. Northwood, who waved his hat and hailed Capt. Vaughan to send a boat ashore. Accordingly, the chief mate was dispatched with six hands, provided with tobacco and other things to ransom the captives. The chief, however, was not satisfied with the proposed ransom, and Capt. Northwood desired the mate to return to the 'Courier' and request Capt. Vaughan to send everything he could possibly spare. Accordingly, Capt. Vaughan gave Mr. Wilson, in addition, three or four dozen handkerchiefs and some other articles, and the crew collected among themselves twenty-five shirts. All these things were put into the long-boat, under the command of Mr. Wilson, with six hands, and accompanied by the cutter with five hands, all well armed. Capt. Vaughan gave positive orders that they were on no account to land, but to anchor near the shore, exhibit the articles they had brought, and only to allow two or three chiefs to approach them to treat.

Mr. Wilson unfortunately disobeyed these orders, and as the natives appeared friendly, he landed the whole party. Capt. Vaughan, seeing from his ship that about forty armed Arabs were hastening to the beach, hailed Mr. Wilson to return on board, and although he was heard the order was disobeyed. The Arabs fired upon the party as soon as they came up, and the only one who escaped was Mr. Barrington Daines, the second mate, who succeeded in swimming to the ship, although desperately wounded, having received two shots in the arm, one in the side, and a severe cut on the head. Mr. Wilson and two men were killed, and three dangerously wounded. Wm. Honey received two balls in the left arm close to the shoulder. He was considered to be dead, and with Mr. Wilson and the two other men was thrown into the sea. The salt water, however, brought him to his senses, and he contrived to crawl to the land.

Capt. Vaughan having only two seamen and two landmen on board, and perceiving that the Arabs were preparing to attack his ship, slipped his cable, and was reluctantly obliged to leave his countrymen to their wretched fate.

The wounded men were carried to a small hut. Their suffer-

ings from their wounds and from the cold were intense, and they appeared to be abandoned by all.

The next day, however, Capt. Northwood induced the Arabs to dress the wounds of the wretched men. Their system of surgery was rude, but it proved efficient; all the men recovered under circumstances in which in Europe recourse would have been had to immediate amputation as the only chance of saving life. The system employed at Arguin was this: all the little boys of the tribe were brought and directed to make water on the wounds; nothing else was done the first day. The following day the wounds were scraped with a common knife, and then burnt with the head of a large nail made red hot; they were then washed with fish-oil, which gave great relief.

The sufferings of Wm. Honey were dreadful; he was burned eighteen times, and eight pieces of the main bone of his arm came away. The wound in his breast they cut out with an instrument resembling in shape a blacksmith's shovel, and they forced out the balls with brass rods. Capt. Northwood describes the screams of this lad as truly awful. John M'Donald received three balls in the abdomen, two very severe sabre cuts on the head, and his skull was fractured. His head and skull were scraped with a common knife twice a day. The sufferings of these men seemed to afford great amusement to the women and children, who imitated their moans and cries.

All these men recovered, although during the eleven months of their captivity their only food was fish, and they were often kept a considerable time without water, although there was always abundance of it. Even the women, who, among the most savage tribes, show some signs of compassion, seemed to take a delight in their sufferings, and the little children pelted them with stones. To add to their misery, they expected every day to be sent into the interior and sold to perpetual slavery.

There was, however, one person who had heard of their captivity, and was taking active measures for their deliverance. That gentleman was Capt. Isemonger, commanding the merchant-brig 'Africanus,' who happened fortunately to be on the coast. This gentleman possesses great influence on that part of the coast of Africa, and he immediately sent a messenger to the king of Trazars, who is very friendly to the English. This monarch without loss of time sent to Arguin, ordered the restoration of the captives, or threatened to send an expedition to destroy the whole tribe. Accordingly, Capt. Northwood and all the men who could be moved, were placed in an old fishing-boat, escorted by ten armed Arabs, and after a painful voyage of nine days, were delivered over to Capt. Isemonger.

Wm. Honey and his two wounded companions were necessarily

left behind; and Capt. Northwood did not expect that they could ever recover from their wounds. Through the exertions of Capt. Isemonger, however, these men were ordered to be delivered up without ransom to any ship that would receive them. No vessel appearing to claim them, after eleven months of dreadful suffering they were conveyed by the Arabs themselves to the Gambia, where they, of course, received the kindest treatment from the Governor.

I will now lay before the Society the most important information I have been able to obtain concerning the island of Arguin.

This island is situated in lat. $20^{\circ} 27' N.$, and in long. $16^{\circ} 37' W.$ It is between 30 and 40 miles long, and about one mile wide. It is about 8 miles from the main land, between which and the island the water is shallow; there are three or four channels, the main having a depth of 5 feet.

To seaward there is a depth of from 5 to 7 fathoms close to the shore. I have been very particular in obtaining information on this point, as Commander Bosanquet, in his dispatch of the 7th Nov. 1844, says, "on surveying the passage beyond that cape (Salinas), I found it impossible without the greatest risk to the 'Alert,' to proceed any farther in the vessel."

Now Captains Northwood and Vaughan, and Wm. Honey, positively state that there is plenty of water (from 5 to 7 fathoms close to the shore). Capt. Vaughan, in his "manifest," which is attested by a justice of the peace at Bathurst, and signed by Lloyd's agent, declares that he anchored near the shore in 5 fathoms, and that when Mr. Wilson was ashore he called to him, and that the second mate heard him and told Mr. Wilson. This is a point that may prove of great importance.

The island is formed of a whitish rock, covered to the depth of about 9 feet with sand, which is constantly shifting. The northern part of the island is flat; the southern rises to an elevation of about 30 feet,* and may be seen at a distance of 30 miles. The island produces no wood except a small shrub called the *phinám-tree*, which yields a caustic juice, and is much used by the Arabs as an application to their wounds, and to cure a sort of scurvy to which their camels are very liable. For fuel they send periodically foraging parties about 50 miles into the interior of the continent, where it appears wood is abundant. Arguin produces abundance of excellent water: this is remarkable, as it only rained three times during the eleven months of the captivity. This water has the appearance of milk, and all speak in raptures of its excellence. As no good water is to be procured within an immense distance of Arguin, and as the wells of the island are

* There is evidently some error here.—Ed.

not easily found, owing to the constant shifting of the sand, I have taken some pains to obtain the best directions for finding them.

Approaching the island from Cape Blanco, you enter a large bay, and at the extremity are seen several huts constructed of sticks and grass, and the remains of an old dilapidated Spanish fort, which is not armed, and is not used. A little to the southward of these huts there is good anchorage in 7 fathoms, close to the shore. The wells are one mile distant from the huts due south, but are only half a mile distant from the nearest beach in a direct line. The wells, or rather tanks, are excavated out of the side of a hill, and are about a foot and a half below the surface. The natives bale out the water with large shells, into goats' skins.

There are two considerable markets or fairs held on the island during the year, in June and December; and many strangers come from a considerable distance to traffic, bringing necklaces, beads, cloths, and tobacco, for which they receive fish and oil.

No money was seen on the island. The number of inhabitants is about sixty, including women and children. Their only subsistence is fish, and oil obtained from the fish. They have no bread nor vegetables. They had a very small quantity of rice, which was kept for the sick; no other grain was seen.

The men leave the island at sunrise and return at sunset, when the fish they may have caught is carried up to the huts and divided among the several families. The men sit down and cut off the heads of the fish, while the women are preparing to boil those from which the oil is extracted; they then cook sufficient for each person's evening meal; the rest is cut up, and hung upon sticks for twelve hours; it is then put into grass and preserved for the markets in June or December. These people are remarkably fond of their children; they seldom quarrel among themselves, and when they do, their differences are speedily arranged by the intervention of the women.

No salt was seen.

They have a chief named Ebonna, who is descended from an ancient family, and is treated with great respect. They are very strict in their religious observances, praying four times a day, and sometimes during the night; they, however, seem to neglect the Mohammedan ablutions, as it is believed that no native washed himself once during the captivity. A Marabout visits them regularly twice a week from the main. The people are tall and well-proportioned; their complexion is of a dark olive colour. Their clothing consists of a blue dungaree, or Indian cloth. They take three yards and a half of this cloth, double it, then cut a hole in the middle large enough to admit the head, and then tie the two ends together on either side. They wear short breeches, which

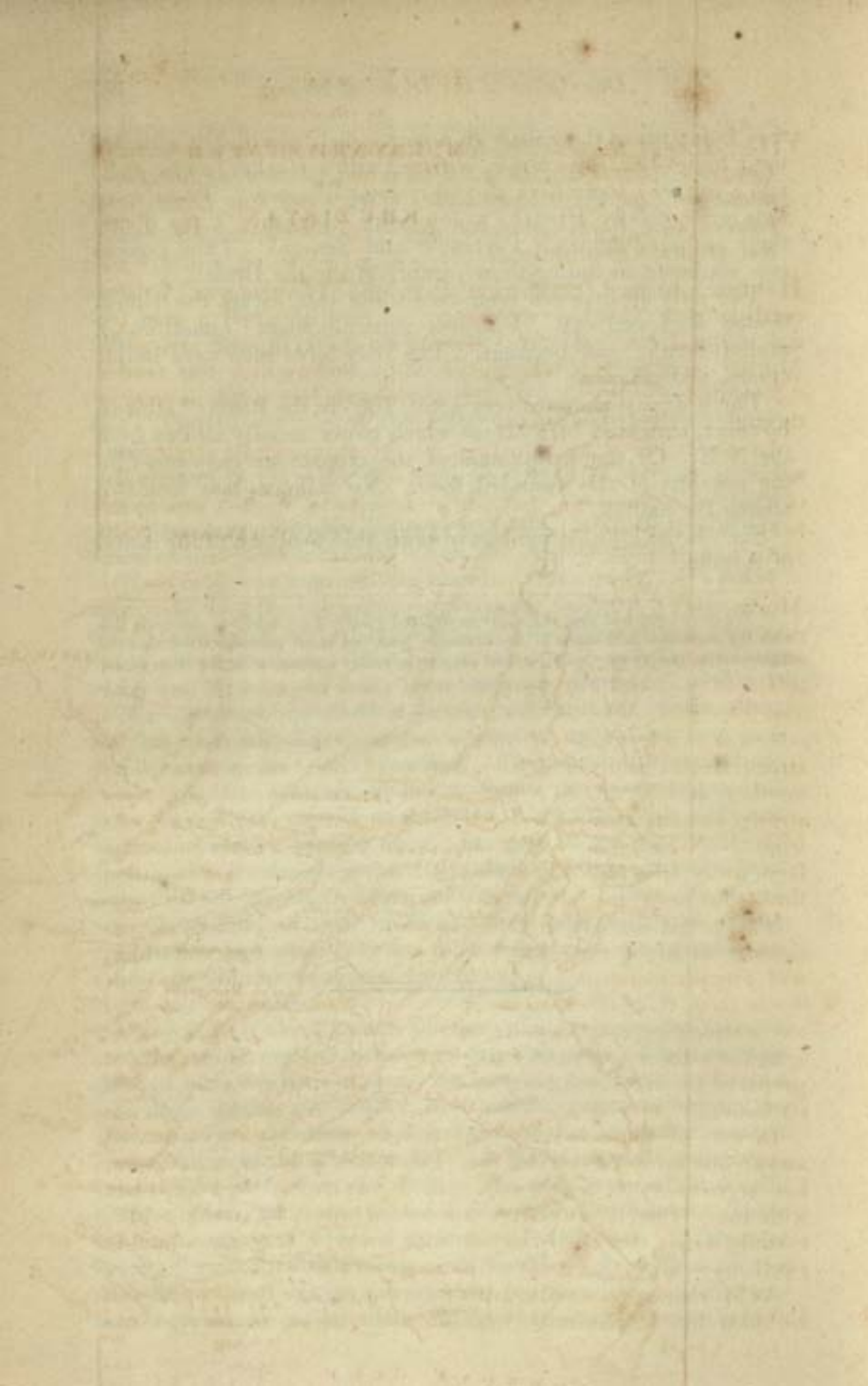
they fasten round the waist with a narrow belt, to which is attached their bullet-bag. Each man is armed with a musket (no bayonet) and a dagger; some have also sabres and scimitars. These muskets were chiefly French, a few were English. They obtain their ammunition from Portendic and Senegal. They possess now six boats, including those captured from the British.

The only quadrupeds seen were white rats, except the domesticated dogs and cats. Fish was most abundant: quantities of mullet, bream, and herrings. The only birds seen were storks, cranes, and pelicans.

The heat is sometimes very great, 105° in the shade; * this is, however, tempered by a breeze which blows usually all day from the N.E. Of the healthiness of the climate we have proof in the recovery of the wounded men. No sickness was heard of among the natives.

Such is the information I have been able to obtain of the island of Arguin.

* We have been told that the captives suffered greatly from cold; to reconcile this with the statement here made of the excessive heat, we must presume either that the nights are in reality very cold, or that they seem so by contrast with the heat of the day.—(Ed.)



VII.—*A short Memoir of the Proceedings of the Honourable Company's Surveying Brig "Palinurus," during her late Examination of the Coast between Ras Morbat and Ras Seger, and between Ras Fartak and the Ruins of Mesinah.* By J. P. SAUNDERS, Commander.

HAVING obtained permission from the Government, I proceeded from Bombay to Muscat, where I obtained a rate for the chronometers; I left that place on the 17th, and arrived at Morbat on the 24th December, in company with the tender "Nurbudda." We experienced a strong belaât wind in passing through Curia Muria Bay.

In obedience to my instructions, I commenced a trigonometrical survey at Morbat, surveying $4\frac{1}{2}$ miles to the eastward of that place, and the bay, on a large scale; I then proceeded to the westward, in continuation of the survey on a scale of 2040 yards to half an inch.

I have minutely examined the coast and bays between Ras Morbat and Ras Seger, and between Ras Fartak and Mesinah, making a total distance of near 180 miles, well sounded; the whole distance is perfectly clear of any shoals which would interfere with ship navigation, with the exception of one near Ras Deriah.

I was much hindered on my first arrival on the coast by the strong Belaât winds which prevail on it, one breeze succeeding another at intervals of eight or ten days, always blowing very strong, sometimes a perfect gale, and constantly varying in gusts from N.N.E. to N.N.W., rendering it quite unsafe to send a boat away from the vessel. These belaâts never last less than three, but sometimes seven, or even ten days.

The belaât is also dangerous to ships near the shore. Occasionally at night the breeze would die away to a perfect calm, and remain so for an hour or two; heavy gusts would then blow down from the mountains at intervals of a few minutes (without any warning except the noise on the water), sufficiently strong to split the sails or carry away the masts of any ship under sail not prepared for it: these gusts would succeed each other for five or six hours.

In one of these belaâts the tender's main-mast was carried away; she however reached the "Palinurus," and, as at that time her services were much required, I jury-rigged and kept her with me. The belaâts were succeeded often by strong southeasterly winds, which, bringing with them a very considerable swell, were almost as great a hindrance as that wind.

At Morbat we received much kindness from the Bedouin Sheikh Bokhert bin Mohammed, who allowed me to measure a base

on shore, and carry on surveying operations, without a single objection. An Arab, named Alli bin Mohammed, who produced good certificates from Captain Haines, I.N., made himself extremely useful to the vessel during her stay.

Morbat Bay affords good shelter from the N.E., but I doubt much if a ship could ride with security in the S.W. monsoon; the natives state, however, that the swell is not very great, and that a buggalow rode the monsoon out by hauling up close to the town. The town of Morbat consists of about 30 or 40 mud and stone houses, with a population of about 150 men, women, and children. Indifferent bullocks and brackish water may be obtained.

Morbat Peak, bearing about true north from the town, is the western brow of a noble limestone range of mountains stretching to the eastward, nearly as far as Ras Nús, a distance of 40 miles, varying in height from 3600 to 5000 feet; between the mountains and the sea is a low plain: their greatest distance from the sea is about 12 miles, at Morbat about 5. The mountains are well peopled, covered with trees and long grass, which affords pasturage to numerous droves of bullocks, sheep, and goats, which I saw on the hills.

From Morbat Peak, the highest range of the mountains curve in to the N. by W., sloping from their brows down towards the plain of Dhafar, the commencement of which is about 20 miles to the westward of Morbat: round it the lower extremities of the mountains rise rather abruptly to about 600 feet; from thence the high range appeared to me to be connected with the high mountains of Ras Seger.

Nearly the whole distance between Morbat and Dhafar the line of coast is clifty, very barren, and uninhabited; one of the ridges from the mountains approaches within a mile of the sea.

At Thagah, and to the westward of it, the coast is low and sandy as far as Diríz; the hills suddenly turn to the northward, and in a semicircular form surround the plain of Dhafar, the greatest distance from the sea being about 14 miles.

The water had been deep close to the shore so far as Thagah but as we advanced along the coast towards the centre of the plain of Dhafar, a bank of soundings suddenly stretched off from it to the distance of 12 and 15 miles, again gradually closing with the coast as we approached the high mountains of Seger.

From the cocoa-nut trees near El Balad the coast bends a little to the southward towards Bander Risút, which is a small yba about one mile in depth, and somewhat more in width, with 3 fathoms, sandy bottom, a considerable distance inside the cape; it affords good shelter in the S.W. monsoon. The inhabitants of the towns of Abkud and Okud pitch tents and live here during

that season, to avoid the heat of the plain, and to catch fish, which then abound here.

From Ras Risút towards Ras-el-Ahmar, and thence to Ras Seger, the water near the shore deepened very much, obliging the vessel to anchor in 28 to 33 fathoms water; the bank still however extended several miles to sea, causing the boat-work to be very laborious.

The coast between Risút and Ras-el-Ahmar is dark, rugged, and barren, the cliffs rising out of the sea, and having 9 and 10 fathoms nearly touching them. Ras-el-Ahmar is a dark bluff cape, about 700 feet high, rising almost perpendicularly out of the sea; it is merely a narrow ridge, scarcely affording footing in some places along the summit: it is composed of limestone, and has a remarkable peak on the very outer extremity of it, by which it may be known.

Ras Seger (Sejer) is a bold cape, about 3000 feet high at 2 miles from sea: it projects but little from the line of coast to the eastward, and has 90 fathoms no bottom at 1 mile distance. This cape forms the boundary between the territory of the tribes Beni Gharrah and Beni Mahrah. The coast between it and Ras-el-Ahmar forms a bay, and is irregular and broken, with two or three sandy patches between the hills and cliffs, which rise directly out of the sea.

Some parts of the land near Ras Seger are covered with trees and jungle, but generally speaking the coast is perfectly barren, with a most desolate and forbidding appearance. From Ras Seger the coast runs into Gúbut Ghummar,* which in consequence of the winds and currents I could not at the time survey.

The first village I came to in the plain of Dhafar was Thagah, and the sight of it was refreshing to us: two groves of cocoa-nut trees, and (for the place) a considerable cultivation of dhurra round it, gave to the little town a very pleasant appearance. We anchored in the evening late, and the next forenoon the Sheikh, Sayyad Ali bin Abdullah bah Omar, sent off a very civil message to me, accompanied by a present of a bullock, some water, and a few cocoa-nuts. A ship could procure a small supply of water and some bullocks here.

The town is built of mud and stones, and contains about 350 inhabitants of all kinds; it appears to be left in peace and quietness by the Bedouins (a rare thing in Dhafar): this is in consequence of the Sheikh being a Sayyad; for even the wildest of Bedouins, who possibly cannot say a prayer, will respect a Sayyad, and his property, from some vague idea that he is connected with the prophet they profess to worship.

* Bay of the Moon.

The Sheikh was very civil, and, in course of conversation with the surgeon of the vessel, offered to take any officer into Hadramaut, which he described as a journey of 15 days: this he proposed to do by going a part of the distance himself, and passing the person from Sayyad to Sayyad. He also described Hadramaut as a large cultivated district, with numerous small independent towns, constantly disturbed by petty jealousies, and at war with each other.

There are at Thagah two fresh-water khors and one (Khor Ririe) salt, which runs from the hills (apparently) and discharges itself into the sea; the upper part may be fresh, but near the sea it is very brackish, and has a perceptible rise and fall: it is separated from the sea by a ridge of sand, and the natives have a tradition that formerly boats could anchor in it. On the sea face of the khor there is an opening in the limestone cliffs (here about 100 feet high) that form the line of the coast, which has a similar appearance to the openings of the Shermes in the Red Sea, and probably has been caused by the action of the water from the khor.

A very remarkable piece of table-land and a large cavern attracting our attention, Dr. Carter visited it, and thus describes his trip:—"Three miles from Thagah you arrive at the bed of the torrent, which comes from the precipices, and which terminates in Khor Rerie, between the two portions of cliff east of Thagah. I followed the wadi for three-quarters of a mile to the foot of the precipice, and then ascended at the corner of it, over, sometimes, the perpendicular face of the mountains, and throughout a dangerous ascent for one not accustomed to that sort of climbing. I arrived at the top of the plateau, which is bounded by mountains on three sides, and the fourth is the edge of the precipice, which looks towards the sea. The sides of the mountains are covered with a thick coppice of gum-trees and other shrubs; the plateau itself quite green and covered with the remains of different kinds of fruit-trees and useful shrubs, having the appearance of once having been a large garden; little streams, which were supplied by a reservoir of water behind, traversed it in all directions, affording a plentiful supply of moisture to the different plots of dhurra, lucerne, and vegetables that were growing there. I went to the cave, which belonged to the Bedouins who conducted me to the plateau; found it of ample dimensions, and was received most welcomingly by the Bedouin's wife. The Sheikh of Thagah's wife was also there in another recess of the cavern, but did not show herself, being an Arab, yet she freely conversed with us. I remained with them the best part of the day; they wanted me to stay the night, offered to kill a sheep for me, and gave me milk as well as some of

their medicines, with an account of their virtues. I saw many sick people from the neighbouring caves who were brought to me. The Bedouf's wife was tall, very handsome, of the gipsy expression and feature; wore her hair in two large plaited tresses, one hanging down on each side of the front of her neck; her dress, a long gown, tight round the lower part of the neck, extending to between the knee and foot in front, and trailing on the ground behind, with large sleeves. Her skin not much darker than that of the gipsy of England. The cavern roof was studded with stalactites, some of which were two yards long. Towards eve, descended to the plateau, and went to the most inland side of it: found it bounded by a canal about 40 yards broad and very deep, but I had no means of ascertaining its depth; it was full a mile long, and appeared to be fed by a stream from the mountain. After this I examined the trees and plants in the neighbourhood, descended from the plateau, and returned to Thagah."

The plateau was of a quadrilateral shape, three-quarters of a mile broad facing the sea, and a mile deep.

The cavern was on the right-hand side of the plateau, on the slope of the mountain, and about 100 feet above it (its base?); the span of the arch was 130 feet; the depth of the cavern 30 yards: it would hold 100 head of cattle besides the people.

Many caves similar to this are found in these mountains, and are considered a great blessing by the natives. They are suited to all the variations of climate which they experience; for they say, When it is too hot outside we can enter inside, and when too cold we can light a fire without fear of having our house burnt down, and our cattle is kept in security. During the S.W. monsoon on that coast, when it is very hot in the plains, these caves make a delicious retreat.

Diriz is a small town with considerable cultivation round it,—jowari, dokhun, cotton, &c.,—the whole guarded by many watch-towers scattered round the town and within shot of each other, which shows the insecurity of the country. It is governed by Oman bin Ahmed Muzzoof, very old and nearly blind; he is the descendant of the former governors of Dhafar, who succeeded to the government on the departure of the Min Goe family.

From Diriz to the westward fresh-water khors and wells are numerous, and the country well cultivated in patches. Long groves of date and cocoa-nut trees growing near the shore, with a fine healthful green look, mixed with the brighter green of the fields of grain, quite changed the appearance of the coast, and seemed most delightful to us, accustomed to the dreary, barren shore we had been surveying.

At my request Dr. Carter visited and examined the ruins of El Balad, and I herewith send in his full and interesting ac-

count of them for the information of Government. The other villages in Dhafar besides Thagah and Diriz are as under:—El Haffer; Sheikh, Salam bin Saad; containing about 600 inhabitants, with eight fishing-boats, surrounded by cocoa-nut trees; some dhurra, mysably, and dokhun cultivated, and several wells of good water.

Robat. Deserted; the houses still in tolerable repair, with a good mosque; wall built of stone, and bearing an inscription on the pulpit with the date of its erection, 1232 of the Hejira; built by Abdul Sheikh bin Tanjah.

Sallalah—Sheikh, Saad bin Mohammed—contains about 600 inhabitants, has one buggalow belonging to it, and is cultivated in a similar way to El Haffer; it has a fresh-water khor and several good wells.

Abkud is a small village with about 80 inhabitants, a khor of fresh water, a little cultivation, and 10 fishing-boats.

Okud, another small village, containing about 120 inhabitants, has some cultivation, several wells of good water, and three boats; it has a salt khor near it.

The whole of these are irregularly built of stone and mud, Sallalah excepted, which exhibits considerable care for appearances, and in one part the houses are built of equal height round three sides of a square facing the hills, and which, strange to say, is kept clean and in good order.

The district of Dhafar extends along the sea-coast from Bander Risút to Morbat, and is bounded by hills on the land side; it is, with the exception of the cultivation near the towns on the sea-coast, quite barren and uninhabited. One large Arab ruin on a mound, in appearance like a fort (which the Arabs would not take us to), and one or two small towers built to protect cultivation, are the only buildings on it. When the celebrated pirate, Sayyad Mohammed Akfl, took possession of Dhafar, after nearly two years' fighting with the Bedouins, he made it his first business to improve the country and bring the Bedouins into good order, which, by dint of his ill-acquired money, he succeeded for 20 years in doing to a great degree: he kept a standing force of 50 seedies and 2000 other men, by whom he kept the Bedouins in check, improved and repaired Sallalah and the other towns, and encouraged trade. He had one square-rigged vessel and a buggalow of his own, with which he traded during the fine season. Any improper act of the Bedouins done in the plain was severely punished by him.

He carried his severity at last too far, for, having put to death some Bedouins for plundering in the towns, the brother of one of them swore to have "blood for blood," patiently waited his opportunity for many months, and at last assassinated the pirate

Sheikh as he was going to the mosque to prayers in the midst of his slaves: the Bedouin was cut to pieces almost in the act, but his family were revenged, for their enemy died. This happened about 19 years ago.

From this time all was anarchy and confusion; each of the little towns set up a Sheikh independent of the others; trade fell off; the Bedouins again became powerful, and annoyed the people of the plain so much that they were obliged to desert Robat, a new town situated but very little farther inland than the others; discord and ill-feeling arose between the inhabitants of the towns; and, ridiculous as it appeared to us when we were there, the people of any one village were afraid to go to another, probably half a mile from it, though I could never learn that their belligerent propensities ever extended beyond the use of their tongues.

The inhabitants of Dhafar are a weak, indolent race, terrified to the last degree at the Beni Gharrah, who, taking advantage of their timidity, oppress them very much, and hesitate not, when opposition is dared to be shown, to use sword or jambier to enforce their demands, as the bodies of very many of the townspeople, which we saw, testified, some of whose wounds were scarcely cicatrised. The Dhafar people all appeared impressed with the idea that the English government were going to take possession of that province, and most anxious to know when it would be done. They are tired of their present state, but have no means of helping themselves.

The trade at present carried on in the province of Dhafar is small. The inhabitants procure myrrh and frankincense from the Beni Gharrah during the S.W. monsoon, which in the fine season is bartered to the trading boats, principally for rice, blue cotton dungarí, dates, and jowarí; but their wants are so few that very little supplies them; the fish which they catch and the little grain they grow being nearly sufficient.

Morbat is the principal trading town. They export and import the same description of articles as the other towns, the Sheikh levying a general duty of 10 per cent. on all exports, and 5 per cent. upon all imports. The weight used by them in buying and selling is a maund, equal to the weight of 48 German crowns; the trade is principally carried on by barter.

The Sheikh of Morbat is brother to the head of what was formerly a powerful subdivision of the Beni Gharrah; his brother Ali lives in the mountains. They are still looked upon as the head of the tribe, and retain several of the privileges by sufferance which their forefathers could keep by their own power. He had always been very civil to the surveying vessels, and I made him a present for his assistance. At El Haffer I filled up

the water of both vessels, which enabled me to remain on the coast much longer than I could otherwise have done. At this place a vessel can procure good water from the people at the rate of 120 gallons for a German crown. It would be very laborious and perhaps dangerous for crews of ships' boats to fill up their own casks, in consequence of the surf; but the natives will bring out the water in their own fishing-boats. If breakers or skins are taken, a supply of from 800 to 1000 gallons a-day may be obtained if sufficient casks are sent at once, for they are lazy, and will not, without some bother, fill a second boat after once leaving off.

The water is procured from the khor round the ruins of El Balad, which may be known by the high mound formed by the ruins of the castle situated at the east end of the long grove of cocoa-nut trees.

I think Bander Risút will be available merely as a place of shelter; for the Bedouins of the Beni Gharrah tribe in the vicinity are men of bad character, who hesitate not to commit any crime. A surveying party, consisting of Lieutenant Fell, Dr. Carter, Mr. Midshipman James, and some seamen, were attacked whilst returning to the vessel from taking observations on Ras-el-Ahmar, and fired upon, by some of these, whilst under the protection of one of the tribe, who had hired himself as protector and guide. Breach of faith I have never before met with. The officers prudently did not wound nor kill any of them, and the Bedouins retired as they approached the vessel. There is a well of indifferent water half a mile distant from the beach.

As early as the 9th of February the winds set in from the southward, and with the southerly winds an easterly current from Ras Seger to Ras Risút: the work was very heavy to both officers and boats' crews.

As we approached Ras Seger the currents became stronger, running constantly from half a knot to 2 knots per hour to the eastward, with light S.S.W. winds lasting for a few hours during the day, and then succeeded by calms which lasted the remainder of the twenty-four hours, detaining the vessels at their station, and sometimes when I endeavoured to move them they lost ground. I finished up to Ras Seger by the boats only.

My own knowledge and the information I gained from the natives and the pilot of the vessel leading me to believe the currents were not so strong to the W.S.W. of Ras Fartak, I determined on going there, and after struggling with the currents off shore for six days I reached it. Some boats which passed the vessel two days before she started, and went round Gúbut Ghummar close to the shore, did not reach Fartak for two or three days after her, proving that the currents were equally strong or stronger

in the bay than we had them off Ras Seger. Off Ras Fartak I found, as I expected, much less current and more favourable winds.

The Arabs on this part of the Arabian coast consider that the N.E. monsoon lasts only three months to the N.E. of Ras Fartak, viz. part of November, December, January, and part of February. The S.W. monsoon is considered over at the middle or end of August, and they begin to trade at the beginning of September. Between the 1st of September and the setting in of the N.E. monsoon is about six weeks, and is a season of light, variable winds called Damauro.

In March the southerly winds to the E.N.E. of Ras Fartak blow sometimes very fresh, particularly in Curia Muria Bay. April and May is considered another season, which is called Bayn el Autem by the Arab navigators. The winds are variable, though generally inclining to the S. Vessels pass up and down, and, as the current sets up to the E., they make rapid passages to Mascat and the Persian Gulf. Nearly all the trading boats which pass down in the commencement of the N.E. monsoon return again in these months, bringing back rafters, grain, and slaves from the different ports to which they have been.

Ras Fartak, supposed to be the Ras Siagros of the ancients, from its resemblance, when bearing E. or W., to the head of a boar, is a lofty headland of about 2500 feet elevation, forming a very prominent cape, which may be seen by navigators 60 miles off in clear weather. The point of the cape is the southern extremity of Gúbut-al-Ghummar, and stretches away to the northward for some miles; it also forms the western side of that bay.

The coast from Ras Fartak runs in a S.W. by W. direction to Ras Dariah (Derkah?), nearly straight, low and sandy. Sand-hills rise gradually towards the interior. The whole is barren, with the exception of a few stunted bushes and small patches of cultivation near the villages.

Ras Deriah projects to the southward about $2\frac{1}{2}$ miles from the line of coast between it and Ras Fartak, and forms the southern extremity of the eastern side of the bay of Keshín. It is formed of perpendicular cliffs, varying from 200 to 400 feet in height. It is, like Ras Fartak, bold and safe to approach, having 9 fathoms within a stone's throw of its base. It is perfectly barren.

The bay of Keshín is immediately on the western side of Ras Deriah, running to the W. by S. as far as the town of Keshín, where it takes rather an abrupt turn to the southward towards Ras Sharwein, the eastern extremity of which forms the southern entrance of the bay.

The western side of the bay of Keshín affords good shelter in the S.W. monsoon, which blows directly off from the high land

of Ras Sharwein. I anchored the "Palinurus" under the cape in $7\frac{1}{2}$ fathoms, sandy bottom, a mile from the weather shore, with the extreme of the low bluff of the cape bearing true S. 20° E.; minaret in Keshin town, N. 17° E.; Sharwein Peak, W. $24^{\circ} 13'$ S.; and the Asses' Ears, W. $19^{\circ} 49'$ S.

I had left a long, high southerly swell outside, but in the bay found quite smooth water, the wind blowing in strong puffs from the land; a low, long swell occasionally rolled round the cape across the wind, but the shore under the Sharwein Peak had not a ripple on it.

The best anchorage, however, is nearer the shore, in $5\frac{1}{2}$ fathoms, shutting in the second and third bluffs. A vessel then loses all the swell, and will anchor in perfectly quiet water, at a long one-third of a mile from the shore. A vessel may anchor still nearer, if she likes, in safety during the S.W. monsoon, for no change of wind takes place during that season, and the buggalows belonging to the tribe remain during it made fast to the shore in security. It would be better to moor. The way to and from Bunder Lusk is open and safe.

The high peak of Ras Sharwein is about 750 feet high; from the peak, which is about 2 miles from the sea, the land gradually slopes to the W. like a gunner's quoin, and terminates in cliffs varying from 80 to 150 feet in height, against the base of which the monsoon swell lashes with great fury. One or two small sandy patches show themselves on the sea front, else all is dark, black, and perpendicular, with deep water close to it. About half a mile to the W. is a hill with two very remarkable sugar-loaf peaks close together, and called by Horsburgh "Asses' Ears."

From Ras Sharwein to Ras Hattab, near 15 miles to the S.W. by S., the coast is sandy, gradually ascending from the beach; in some parts it is blown up high against the sides of the hills: one remarkable black rock only rears itself through the sand; the whole distance of the coast is safe to approach.

From Ras Hattab to Ras Aghrib the coast continues in nearly the same general line of bearing, but becomes broken; several rocky capes project from the sandy beach and form small bays between them, some of which afford shelter in the N.E. monsoon to small boats and buggalows; a few miserable fishermen live in different spots along the coast. The coast is bold and safe to approach; from Ras Sharwein to Ras Aghrib, however, the water becomes less deep near the shore.

From Ras Aghrib to Mesinah the coast is again low, straight, and sandy, with regular soundings off it, and may be closely approached. It has little or nothing worthy of notice on the shore, except the town of Sihút and one or two patches of date-trees.

Magnificent ranges of mountains, varying in height from 3000 to 4000 feet, run along this part of the coast, at a distance of from 10 to 13 miles from the sea. A few miles to the W. of Sihút the Wadi Masilah breaks the ranges of these mountains. The width of this valley between the brows of the mountains is 6 miles: through it is the road to Hadramaut from all the Mahrah towns. It is represented to be well cultivated, with large and numerous date-groves and plenty of water in it; a village is situated in a grove of date-trees on the plain at its entrance. The fishermen told me that the people at Sihút and the villagers, though a branch of the Mahrah, had quarrelled, and that the former could not enter the valley. The ruins of two strong forts, one on each side of the entrance of the valley, show that the pass to the interior was at one time thought worthy of being well guarded.

At Mesinah a surveying party landed, after two days' negotiating with the Bedouins. Dr. Carter proceeded to examine the ruin and its vicinity, in the hope of finding the inscription stated by the Rev. Dr. Forster in his work to have been seen on a large stone over the south gate.

The place was visited and examined by the officers under command of Capt. S. B. Haines* during his survey of the coast, but, to prevent any chance of such an inscription being overlooked, Dr. Carter again visited the mound, and spent several hours in examining the ruin and the plain about it.

He merely found a mound about 15 feet high, but no trace of an arched wall or gate was perceptible; it is almost, however, a shapeless mass, but on diligent search Dr. Carter found vestiges of what he conceived to be the original sides of the building, and, tracing them very carefully, he measured them about 36 yards square, having apparently had a tower at each angle; on the side facing the east there were appearances which indicated that steps had at one time led down from the castle.

The walls have been built for some feet up with limestone; some of the stones are 2 and 3 feet long, and cut; the upper part of them is the common black basalt with which the neighbourhood abounds. Dr. Carter took pieces of each kind of stone, also portions of the mortar from between two pieces of the limestone, and compared them with a piece taken from between the latter and the basalt at the line of connection: both were of the same composition, the same hardness, and apparently the same age.

From the size of the castle I should imagine it could never have been used for any other purpose than to receive and protect

* See Capt. Haines' paper, Vol. XV. p. 104.

goods whilst waiting for carriage into the interior; there is no appearance of a town having ever existed near it. A long back-water runs along to the E.N.E. (separated from the sea only by a narrow slip of land) for about a mile, and then branches into the interior a short distance: the depth was trifling, stones in all directions showing their black faces above the water.

Some mangroves are scattered about, particularly to the W.S.W. of it; and many whitened stumps, sticking up through the sandy beach, indicate that the sand has of late years been encroaching to no small extent.

The swamp or back-water has a small opening into the sea, very narrow, but still it connects it. A spring of good fresh water bubbles up under the salt, near the ruin, though I believe it is uncovered at low water.

The water the fishermen and the Bedouins use is some distance from the beach.

Tribe.—The whole of the coast from Ras Fartak to Mesinah belongs to the Mahrab tribe, but that forms only a part of their territory, which extends through Gubut-al-Ghummar to Ras Seger; and they again, it is said, make their appearance in the vicinity of Ras Nús, the two portions of the tribe being divided by the Beni Gharrah; they have the character of being the most united and powerful tribe on the coast.

The head of the tribe is Sultan of Keshín, Omar bin Towari bin Afrite: this last title his family has borne for many generations, why I could not discover. His influence extends generally over the whole of the Mahrab tribe; but what may be termed his government extends only from the town of Hasweil to Mesinah. In the vicinity of Ras Fartak, the Sheikh of Wadi, Esah bin Mombarrack, is considered as the chief, always professing the greatest respect and obedience to Omar bin Towari. Beyond Fartak the government and coast is portioned out in a similar way to the chiefs, all however considering the Sultan as their head.

The chiefs of this tribe seemed but ill inclined towards the English. At Ras Fartak, on one occasion, I sent the interpreter on shore to the fishing village of Kesíd, to open a communication with them: the people appeared much frightened, would give him no information, promise him no safety, neither sell him anything for the use of the vessel; but told him to go on board, and then left him by himself. They also told him that the Bedouins would come down to us; and it afterwards appeared that the dread of them induced the fishermen to act as they did.

Not knowing what might be the feelings of the Bedouins towards us should they come down, I started a surveying party

off at break of day to measure a base and take the necessary observations for commencing the survey in this part: this they were allowed to do unmolested; but in the evening, when a party again went, they were warned off, and on looking round they saw the rocks were covered by matchlock-men with matches lighted and guns pointed to the boat.

After a long time the interpreter was allowed to land, and the demand what he wanted, &c., was often repeated; the conference ended at last by the Sheikh of Wadî saying we should neither land nor sound, and if we did we should be fired upon. I merely sent a message to say that, if any of the boats were fired upon, I would sink every Mahrah buggalow I met with; and as the boats were on the point of returning at the end of the season, this had the desired effect; the Sheikh went away and we were not molested.

I sent the interpreter to the Sultan of Keshin, on my arrival there, to demand an explanation and purchase a few articles required for the vessel. The Sultan would neither give an explanation nor allow any person in the town to sell a handful of dates to us; yet his tribe have several buggalows that go to Mangalore and Aden yearly.

Towns.—Of the towns and villages on the western side of Ras Fartak, Kesid, or, as called by the people in the buggalows, Teif, is a small fishing village situated immediately at the base of the high land on the western side of Ras Fartak. It contains about 32 small houses and 150 men, women, and children. It has no trade; the inhabitants are miserably poor, subject to the depredations of the Bedouins, to whom they can offer no resistance, running away to the hills when they hear of any number of the Bedouins approaching. Off this village is the usual anchorage of the boats trading with the Mahrah tribe situated in the windings of the small valley on the western side of the cape. At $1\frac{1}{2}$ mile from the sea are some small date-groves, and the villages of Dhekrabait on the eastern side, and Kuddiefut on the western side of it; the former village containing about 70 houses and 250 inhabitants, and the latter 90 houses and about 300 men, women, and children. These are well supplied with water from many wells in the neighbourhood, and the inhabitants cultivate in small quantities dhurra dokhun, a hab or ghoom: they have two small khors of salt water near them, from which they make considerable quantities of salt, and export it.

The towns are built of mud and stone, but not walled. A few trading Bedouins live there, but the rest of the inhabitants are Arabs; no Banians are allowed to remain.

Wadî, one of the most powerful towns belonging to the

Mahrah tribe, lies about 3 hours' journey from the landing-place at Kesf, following the valley at the western foot of the Fartak hills. It has three or four forts or large fortified houses for its protection, capable of being defended, and contains about 600 men, women, and children; of these, 200 are said to be well-armed men, fighting characters, and Bedouins.

Wadî is a place of considerable trade, and its port is Kesf. The inhabitants own several buggalows, which trade to Mangalore, Mascat, and Zanzibar, touching at other ports on their way. The principal exports are salt, salt fish, and sharks' fins; the imports, rice in small quantities, blue and white linen cloth from India, slaves, tobacco, and wood for building boats and rafters from Zanzibar and the African coast, dates from Mascat and the Gulf. The inhabitants are wealthy for Arabs, and their arms are well decorated with silver; but there, as in general with the Mahrah tribe, they bear a bad character, and are not trusted by the trading Arabs.

It is the largest slave-dealing town on the coast, and a number of slaves are annually imported which are sold to their own and other tribes. It may be recollected they sent two buggalows with slaves to India, which were seized by the government authorities. On hearing that, the Wadî people seized an English buggalow in retaliation; and although they seem to be under the apprehension of being one day punished for so doing, the Sheikh of Wadî, Eisâh bin Mombarrack, in the conversation the interpreter had with him at Ras Fartak, professed to consider the matter settled and at rest. He said, "The Government seized my slaves; I seized a buggalow of equal value, and paid my merchants; that made things right."

Hasweil is the next town to the S.W. by W. of Fartak. It is situated near the beach, built of mud and stone, not walled; it has several houses, about 70 altogether, built for defence, and 450 inhabitants; has several fishing-boats, and is well supplied with water. A little dhurra, &c., is cultivated, but the inhabitants depend a good deal on the fishing-boats for food, and carry on a small trade in them along the coast from village to village, sometimes going a long way from their home. There are a few date-trees in the neighbourhood.

Saghar is a small town similar to Hasweil, only more straggling; contains about 90 houses and 550 inhabitants—is well supplied with water. A considerable quantity of grain is cultivated in the vicinity; but the people are obliged, in common with the other small towns, to keep a sharp watch over it, as the Bedouins in the wantonness of power hesitate not, when it has sprung well above ground, to drive at night their goats and other cattle in the

midst to eat and destroy it. This village has no boats. On some low cliffs to the S.S.W. of it stands a large white Mohammedan tomb.

In Keshín bay, between Ras Derkah and the town, are the villages Haft and Súk; the former having about 20 houses and 150 people, and the latter about 25 houses and 180 people: they cultivate a little grain near the village. Near Súk is a salt-water khor called Khor Súk, and a few date-trees.

Keshín is the residence of Sultan Omar bin Towarí bin Afríte. It is a large straggling town nearly half a mile inland; it has a long sea front, which makes it appear to be much longer than it actually is. It contains about 110 houses and 600 inhabitants.

The sultan and his family, as well as the other inhabitants, are poor, and carry on a small trade with the Gulf, Zanzibar, and the Malabar coast. They export to Zanzibar salt and dried fish; to the Malabar coast they send money principally; and receive in return from those places jowarí, rice, cotton, cloth, dates, sugar, and coffee. Two Banians are allowed to reside in Keshín. Between the town and the sea some little grain is cultivated, but not nearly sufficient for the uses of the inhabitants; the deficiency is supplied from Zanzibar. Keshín is one of the Mahrah ports, in which their boats are laid up for the S.W. monsoon, and I found twelve buggalows of from 30 to 100 tons securely moored in Bander Lask, on the S.W. side of the town, some made fast to the shore and their own anchors. The water was perfectly smooth for half a mile off shore, and not a ripple on the beach near the boats; I had left a very heavy swell from the S.S.W. outside.

The next village is Hattab, about 12 miles from Ras Sharwein, situated a mile inland. It has some date-groves, and is well supplied with water, contains about 40 houses and 350 inhabitants: six small fishing-boats belong to it; it is a village of little trade and no consequence.

Sihút was one of the towns, if not the principal town, of the Mahrahs to the S.W. of Ras Fartak. It is long and narrow, and, as its length faces the sea, it looks, in that direction, a large town; it contains about 180 houses and a population of 1000. Very many of the houses are dilapidated, some in ruins, and the town is apparently falling fast into decay. It has a considerable trade, however, and possesses 15 buggalows of different sizes, and 50 fishing-boats, which are constantly employed about the coast in the fair season catching sharks, sun-fish, &c.; the latter they dry in the sun, and it is then exported to Zanzibar and other towns.

The Mahrah tribe, as I have already mentioned, extends from Mesinah to Ras Seger; the country of the Beni Gharrah then

commences, but it is said that the Mahrah tribe have territory in the rear of them, and again make their appearance near the sea about Ras Nûs. The Mahrah tribe were formerly nearly, if not quite, the most powerful on the S.E. coast of Arabia, and their territory extended from Hussan Ghorab to Ras Isollette; but the neighbouring tribes, amongst whom were the Beni Gharrah, as their strength weakened, gradually deprived them of their territory both E. and W., and even a large slice out in the very centre of it.

The tribe is divided into three great branches, who are constantly at variance with each other, but who would instantly unite against any enemy and drop all their private quarrels. In consequence of the heavy swell constantly rolling in when I was on the coast, I could have but little communication with the shore; the ship's boats could not land at any time, and for days the fishing-boats of the coast could not be launched through the surf. The men who came off in two or three boats showed a great unwillingness to give any information or to take officers on shore; in fact, by constantly demanding more money after a bargain was for that purpose concluded, showed they would not do it.

The family of the present Sultan, Omar, of Keshîn, have for many generations been considered as head of the tribe; he is also looked up to with much deference and respect; his influence is great amongst them; but I doubt if, were he to attempt to issue any command distasteful to the tribe, they would obey it; he has no means of enforcing it. The Sultan has been blind for years; he was an energetic old man, but wayward, and it is said his intellect is failing.

On our first visit to survey off Keshîn, I sent the interpreter to him immediately on anchoring to explain the reason of my visit, and also to request he would let us purchase some fresh provisions and other articles the vessel required, which I was most anxious to procure, Berri Berri having made its appearance in the ship. He not only refused to let us have what the vessel required, but would not allow the boat's crew even to buy a few dates to eat on shore. The interpreter referred to the way in which the Sheikh of Wadi behaved to the vessel at Ras Fartak; but the Sultan endeavoured to waive the subject, and would give no answer—once saying that they were wild men, but nothing further. And, judging from the way he behaved to the vessel at Keshîn, I imagine it was done either with his sanction, or that the Sheikh's conduct did not displease him.

The Mahrahs possess in all about 60 trading-boats, varying in size from 90 or 100 to 10 or 15 tons, the greater number of which are sent away at the commencement of the N.E. mon-

soon, and remain out until the end of it, when they return with their profits to their different ports; during the above period they keep trading from port to port, hiring the boats to whoever will freight them. They are the greatest slave-dealers on the S.E. coast of Arabia, bringing yearly from 250 to 500 men, women, and children from the African coast; of these, few are sold in the Mahrah territory, but are taken to Maculla and the towns in the Red Sea. The buggalows and their cargoes are generally the property of several individuals, often residing in different towns.

Winds, &c.—The winds to the south-westward of Fartak towards the end of March generally blow to the S. of E., sometimes S.E., and even S.S.E. and S.; occasionally, the current also changes and sets to E.N.E. along the shore. The wind generally dies away at night, rendering progress to the W. very difficult. The trading boats from the Persian Gulf and Mascat begin to return in this month from Zanzibar and the Red Sea, and continue to do so until near the end of May. An occasional turn in the current to the westward may take place, and a shift of wind from the N.E., even as late as the 25th of May, but it does not often occur.

To the E.N.E. of Cape Bogashua, after the beginning of May, a high long swell gradually sets in from the southward, rising much higher in the day and falling towards sunset. A long swell rolls on to the coast during the whole of the monsoon; but the fishermen, when they have a small nook to shelter their boats in launching, go out to fish in it at times.

In the "Palinurus" I experienced this swell during the whole month of May, which, when the wind died away, caused her to roll very heavily. It would affect a steamer, of course, in the same way in passing, as generally it would be four or five points on her bow.

From the best information I could procure from many of the natives on the part of the coast I was surveying, fishermen and others, it would appear that the S.W. monsoon, to the south-westward of Morbat, close to the shore, blows fresh only occasionally—a breeze lasting from three to four days; and is then succeeded by light breezes and calms from three to ten days; the swell, however, remains. The sea is not so great as that experienced on approaching India. A large steamer passing down from Morbat would be obliged to keep near the shore, where she would experience lighter winds; and it would of course be necessary to keep a good look-out and the lead constantly going; though, in some parts, even that would be no guide for the distance off shore. She might, if necessary, pass along at 1 mile distance in the day, and a few miles off it at night; occasionally

she might probably set her try-sails: but a strong current, from $\frac{1}{2}$ to $1\frac{1}{2}$ mile per hour, would be constantly experienced, running against her to east-north-eastward.

From Morbat to Ras Isolette the coast bends a good deal to the westward, forming two bays, with the Curia Muria Islands projecting from it at a distance of upwards of 30 miles. Along these bays, and nearly as far as Mazeira* Island, the natives that I have spoken to all agree that the monsoon blows stronger and the swell is much higher than on any other part of the coast: this part is much dreaded by them. They also stated that the monsoon sets in there with a gale of wind, dark gloomy weather, thunder, lightning, and rain. Many boats that have been caught in it have been lost: after the first burst, the weather is the same as in the open ocean.

This would be a dangerous part of the coast for a steamer passing in the monsoon; for, the shore running so nearly E. and W. with the islands off it, and the wind and sea from the southward setting directly on them and on the coast, were an accident to happen to her engine on this boisterous part, it would be very doubtful if she could clear herself of the land: it affords no shelter, unless under the largest of the Curia Muria Islands, if she could fetch it. There are soundings, but so deep, except to the eastward of Curia Muria Bay, that a ship would hardly hold on even if she anchored. The reports of the Arabs must always be received, however, with great caution; but I think it doubtful if the passage could ever be relied on with certainty, so as to be advantageous. Under any circumstances, the steamer would have to keep the shore close on board; and the weather being always hazy, the most unceasing and vigilant look-out (particularly at night) would be required, for the slightest deviation from the course might be fatal to the vessel. A ship lately arrived at Bombay from Mascat went up that part of the coast in the month of July, and after passing Maculla her rate of sailing varied from 9 to 11 knots, experiencing strong W.S.W. and S.W. winds. Such a breeze would of course be equal to any experienced on the Indian coast, and would be most unfavourable for a steamer. She passed near and sighted most of the headlands on the coast.

* Massera of the maps.

VIII.—*The Ruins of El Balad.* By HENRY JOHN CARTER, Esq., Assistant-Surgeon, I.N.H.C. Brig "Palinurus." Communicated by the Directors of the Honourable East India Company.

ON the south-eastern coast of Arabia, in the district of Dhafār,* are the ruins of El Balad, situated on the shore in lat. 17° 1' N., and in long. 54° 12' 30" E., between the towns of Sallalah and El Hāfār on the west, and that of Diriz on the east, separated from the latter by a grassy plain of more than a mile in extent, and from the former by the same distance of richly cultivated ground; in front a narrow slip of sandy beach divides them from the sea, and behind them the level plain of Dhafār stretches back to a lofty range of mountains, which forms the inland boundary of this district.

The ruins, situated within 100 yards of the sea, are spread over an area of 2 miles long and 600 yards broad, and consist of extensive mounds of loose hewn stones, worn and blackened by long exposure to the weather. Groups of columns surmount each mound, with capitals, shafts, pedestals, and fragments of ornamental sculpture strewed around them, and occasionally troughs used for baths; all of which, having been skilfully worked out of solid blocks of freestone, give an air of costliness and importance to the remains of this city, which, contrasted with the dilapidated state that the whole now assumes, forcibly recalls to the imagination the activity, wealth, and prosperity, which but a few centuries ago existed in those now desolate and dismal and unfrequented ruins.

However much the hand of time has succeeded in mixing up the remains of one building with those of another, the widely spreading and superincumbent masses of ruins may have obscured the foundation on which they were originally erected, or the Arabs of the neighbouring towns may have stripped this deserted place of its most valuable ornaments,† enough still remains to place beyond doubt the original extent of the city, the style in which it was built, the sites of its principal edifices, its architecture, its burial-ground, and particularly the walls and ditches of that part of it which was fortified, each of which, when

* The district of Dhafār (Zafār) is the most extensive of the lowland tracts that intervene between the mountains and the sea on the south-eastern coast of Arabia. It possesses a rich arable soil and an abundant supply of fresh water. At present its coast limits are considered to be the village of Thakāh [pronounced Thāgah] on the east, and Ras al Ahmar [Red] on the west, from which two points the mountains recede from the sea to a distance of 15 miles, leaving an interval which is filled up by the low land now known by the name of Dhafār.

† I was informed that many of the pillars in the mosques of Diriz, and the now deserted village of El Robāt, were taken from the ruins of El Balad.

described as they now present themselves, ought not only to convey to us an idea of what the ruins of El Balad now are, but also of what the city must have been in its most prosperous state.

The city was divided into an eastern and a western portion; the former of which was fortified, the latter unfortified.

The unfortified or western portion considerably exceeded in extent that which was included within the walls of the garrison, and now consists of a vast number of extensive mounds of hewn stones, irregularly disposed, each of which is characterized by the presence of two or more columns on its summit, which retain their original position, while others that stood beside them, having been upset and broken, lie scattered around, with portions of ornamental sculpture, cornices and the like, remnants of the arches, ceiling, and walls that once formed parts of the building. Although this portion of the city was the most extensive, and included the burial-ground, yet it is now by far the most insignificant part of the remains, inasmuch as nothing more can be satisfactorily made out of them than that the dark mounds of loose stones mentioned mark the sites of so many buildings; and in the burial-ground, which was situated in the northern quarter, there is hardly anything more to attract the notice of the observer than the remains of the commonest head-stone, and on none of those even could we discover any date. Thus, while the western portion exceeded in extent the eastern, or fortified part, there can be no doubt that the latter originally possessed the finest buildings, and was the most important part of the city, as it affords at the present day by far the most interesting part of the ruins, since it is here that we can distinctly recognise the remains of a foreign and highly civilized people, the first and the last probably that ever asserted supremacy over the district of Dhafár; and while at the same time we can satisfactorily discover traces of their increasing prosperity and power, we can as satisfactorily recognise signs of their sudden destruction.

The fortified part of the city was confined within a parallelogram or quadrilateral space, 1240 yards long and 500 yards broad, extending longitudinally along the shore, defended by a deep ditch and rampart on three sides, and on the fourth, or that towards the sea, by a strongly fortified wall. The ditch, which was for the most part a natural defence of the fortification, was formed by a fresh-water khór,* now known by the name of the

* Khór [properly Khaír], a creek or inlet of the sea, is generally applied by the inhabitants of the south-eastern coast of Arabia to the water that remains at the mouth of a mountain-torrent into the sea, many of which occur in the district of Dhafár; some of them retain their original freshness, while others, communicating with the sea through the sandy beach, become brackish. That of El Balad is fresh; and as it does

Khór of El Balad. This was subjected to a little alteration, for the purpose of more completely enclosing the garrison; and while it was admirably adapted for the purpose to which it had been converted, it afforded close to the sea, both to the city and fort, a never-failing supply of excellent water; indeed, so convenient a situation could not again be met with on the coast. The only artificial part of the khór appears to have been the western ditch, which is now dry and partly filled up with sand and ruins. This was 27 yards wide and 403 yards long, extending from its junction with the western extremity of the northern ditch to within 100 yards of the sea, and on each side of it was a strong wall, the remains of which are now nearly buried under heaps of adjacent ruins.

The khór itself consisted of the main body, or northern ditch, and three roots or branches, the first of which, given off from its northern side, runs inland; the next, from its southern side, forms the eastern ditch; while the third is the termination of the main body itself.

Beginning from the western extremity of the northern ditch, which at this point is 60 yards broad and partly filled up with rubbish, the water, as we proceed, gradually becomes deeper, and a thick belt of tall bulrushes, springing up on each side, leaves a clear channel in the centre, which is covered with a great variety of water-fowl. Before reaching the north-eastern angle of the garrison, it gives off, from its northern side, the inland branch, which, after an irregular course of 300 yards, ends in a sharp-pointed shallow extremity. After this, the branch which forms the eastern ditch is given off from its southern side, 1240 yards from the north-western angle of the fortification, and this, running directly towards the sea, terminates abruptly in the sandy beach, while the third branch is continued on in a tortuous course from the main body itself towards Diríz, terminating in a shallow, pointed extremity like that of the inland branch.

The widest part of the khór is that opposite the north-eastern angle of the fortress, exceeding at this point in the northern ditch more than 100 yards across. In the deepest part it does not appear to exceed 14 feet, but I had no means of ascertaining this; the inhabitants, however, have an idea that it is bottomless.

not appear to be connected with the bed of any torrent, there is some difficulty in conceiving how a large body of water such as this is, on a level with its banks close to the sea, and much above the level of the latter, should not diminish in quantity or become brackish. I have an idea that this khór, and some others that I have seen in the neighbourhood, are natural Artesian reservoirs, so to speak, which have been produced by some volcanic succussion, or other cause, in rending open a deep fissure in the ground, which communicates below with a spring of water. The opinion of the inhabitants that many of these *khórs* are bottomless or of great depth, although it favours the supposition, far from establishes the fact.

Its edges, like those of a canal, are firm, dry, and regular, and in no part bordered by swampy ground; it is always filled with fresh water, and does not appear to undergo any diminution, or be affected by the rise and fall of the tide, although its eastern branch terminates in the loose sand of the beach within 100 yards of the surf. Thus, while this khór formed the ditches of the fortification, it afforded at the same time an abundant supply of fresh water to the garrison, and at the present day, from its proximity to the sea, is one of the cheapest and most convenient places on this coast for a ship to water at.

The walls of the fortress were principally confined to the southern and western sides—those being the least protected by natural defences; while an embankment, or kind of rampart, thrown up from the ditch, supplied their place along the northern and eastern sides of the khór.

The rampart, or embankment, on the north side (or perhaps breastwork would be the best term for it, as it was never very considerable), was continued from the north-western to within 40 yards of the north-eastern angle of the fortress, where it now turns abruptly towards the south for a distance of 42 yards, and then, following its original direction, arrives at the border of the eastern ditch, leaving a square portion at the north-eastern angle, over which the khór occasionally flows. Although mounds of ruins frequently occur along the embankment, there is not the remotest trace of the original form preserved in any of them. On the eastern side a small round tower, with the remains of a wall and rampart on each side of it, marks the termination of the northern embankment in that thrown up on the eastern side; and from this tower the eastern embankment was continued on to the south-eastern angle of the fortification, presenting in its course the remains of a landing-place on the border of the ditch, corresponding to one which will be found to have existed in a similar position on the western side.

Having described the embankment which was thrown up on the inner borders of the northern and eastern ditches, we now come to the remains of the wall which defended the southern side of the fortress, and, commencing at its eastern extremity, or the south-eastern angle of its fortifications, we shall follow it westward to its termination at the south-western angle.

The remains of a small round tower mark the angle of union between the eastern embankment and the southern wall, and immediately on the west side of it the threshold of a narrow doorway, from which the foundation of a wall $4\frac{1}{2}$ feet thick can be distinctly traced in a straight line for 309 yards, with 13 salient mounds in its course at nearly equal distances from each other, on each of which are remains of the foundation of a round

tower, formed of concavo-convex blocks of stone strongly linked together. The remains of this wall, which appears never to have been carried beyond the foundation, terminates at a point where a flanking bastion or tower was run out 30 yards into the beach, and from the base of this, in continuation with the original direction of that from the south-eastern angle, a stronger wall, which, from the parts that remain and the quantity of ruins round it, had evidently been completed, was continued on for 255 yards, where a similar bastion to the last-mentioned stretches 30 yards out into the beach; and between this and the former one were four other smaller salient towers, equidistant from each other and projecting two-thirds of their diameter beyond the wall, the whole now enveloped in heaps of ruins. From the last point to the south-western angle, where there is another strong bastion or tower extending on towards the sea, in a line with the other two mentioned, all is obscured under a confused mass of ruins. The remains of old have become mixed up with those of modern buildings, and the accumulation of stones and mounds of rubbish now effectually precludes all possibility of tracing the southern wall farther than the point mentioned, although there can be no doubt that it was continued throughout the remaining part of the southern side.

To complete the fortifications we have lastly to examine the western side of the garrison; and, commencing from the tower that was run out towards the sea from the south-western angle, we observe the remains of a strong wall, without any towers along its course, which existed between this point and the north-western angle, and, projecting from it into the ditch, the remains of a building in which there were four rows of columns, six in each row; this appears to have been a landing-place similar to that on the western side, from and to which passengers were either conveyed in a boat or passed over a drawbridge into the garrison, in order that there might be no public thoroughfare through the southern wall, which would have materially weakened that part, the least strong of the fortification. The remains of this wall, like that on the southern side, are almost obscured by its own ruins and those of the adjacent buildings, and nothing more can be made of it now than that the wall did exist, and there was in its course a building which projected from it into the ditch.

Thus we have now followed the remains of the ditches and fortifications round the four sides of the parallelogram, or of that part of the city of El Balad which comprised the garrison. We have seen it surrounded on three sides by ditches, and on the fourth by a strong wall, with an embankment thrown up on the inner side of the northern and eastern ditches, and a strong wall

against the western ditch, with the remains of a narrow entrance close to the western side of the small tower that marks the south-eastern angle, and the ruins of two landing-places projecting into the eastern and western ditches. Let us now direct our attention to the traces of ruined edifices within the fort, as it is only here that we can find any that will admit of a particular description.

The highest and largest mound of ruins within the fortress appears in the north-western angle, and this probably is the remains of the citadel. Whatever the building or buildings might have been, they were confined to a square area of 120 yards and surrounded by a strong wall. In the centre of this area stands the mound of ruins, the most elevated part of which is 30 feet above the surrounding plain, a height much exceeding that of any other part of the ruins. On its summit is observed an opening 4 feet square, which descended to a well beneath, so that water could be immediately drawn to the top without any further trouble; and some way down it, on a line with the base of the ruins, two archways may be observed, the extremes of two passages leading to the well from beneath. A short distance below these the well appears to be filled with rubbish, no water being visible. Nothing else can be made out on the summit of this mound, except the remains of a brick-work building, the only one of this material among the ruins: this, from its lightness, was well adapted for a superstructure; and if it formed a part of the original building, and there is no reason to make me think otherwise, it must have considerably added to the height of the citadel; but the whole has been so disfigured and disturbed by modern attempts to erect a dwelling there, that scarcely a trace remains of the original state of the ruins, much less of that of the building they composed.

Within 100 yards of the citadel, elevated on a mound from 8 to 12 feet above the surrounding ground, are the remains of a temple of a quadrangular form, having its longest diameter directed towards the W.N.W., or in the direction of Mecca. It was 45 yards long and 36 yards broad, and originally contained 183 pillars, with an area of 13 yards square in the centre. The pillars were disposed around this area in rows of 7 deep on the W.N.W. side, and of 4 deep on all the other sides, and, at the time the building was perfect, no doubt contributed to form double or treble colonnades around it. The pillars that remain average 12 feet in height, including both capital and base. They were for the most part roughly, though symmetrically, sculptured with round or octagonal shafts, 2 feet in diameter, and nearly all hewn out of solid blocks of stone. Although but few of the columns still retain their original position, yet the bases

of those which have been upset or taken away remain and satisfactorily point out the lines in which the whole were formerly disposed; while the floor, which is now almost entirely concealed from the accumulation of rubbish over it, was composed of flags of the same stone as that from which the columns were hewn.

The dwelling-houses were also built on mounds raised from 8 to 12 feet above the ground, and consisted of one large room on the ground floor, with a small walled inclosure attached to it. One side of the building invariably faced the N.W., or was directed towards Mecca; and within, two or more rows of columns of 4 or 6 deep, according to the size of the room, supported semi-elliptical arches, on which rested the ceiling. On most of the mounds two or more of the columns still retain their original position, while the others are lying round them either in a broken or an entire state mixed up with various ornamental fragments of the dilapidated building. A little flight of steps in one corner of the basement story led to the upper part of the house, and the doorway was situated in the centre of the side opposite to that which faced the W.N.W., so much in the manner of a Mohammedan place of worship, that, did not every mound possess the same features, we might be induced to think that they really were the remains of small musjeds. The inclosure, which was on the same side of the building as the doorway, was divided into two parts: that nearest the house was open and had a pathway leading through it from the gateway of the inclosure to a flight of steps at the threshold of the doorway, while the outer portion was again divided into two parts by a central wall, on one side of which were two stone baths, and on the other a well 4 feet square and 14 feet deep with its sides smoothly plastered, from the top of which a gutter passed through the central wall and communicating with the baths on the opposite side afforded a convenient means of supplying them with water.

On the southern side of the temple, and about 100 yards from it, are the remains of a gateway, at the foot of which lies a large block of stone obliquely broken through the centre. When entire it was 14 feet 9 inches long, and 2 feet 2 inches by 1 foot 10 inches broad. It was so imbedded in sand and ruins that it was with difficulty we could scrape out a hole beneath it large enough to place the head in for the purpose of ascertaining if it bore any inscription on the side which was next the ground. This effected, however, we recognised some Arabic characters in relief on it; and having mentioned it to the commander of the Honourable Company's brig "*Palinurus*,"* he be-

* Capt. P. Sanders, I. N.

came desirous that the stone should be turned over for the purpose of ascertaining if there was any date discoverable on it. Accordingly the next day we landed; and after having accomplished our object, found the inscription placed on the broad side of the stone, extending to within 1 foot 8 inches of one end, and to within 2 feet 8 inches of the other, so that it was not exactly in the middle. It originally consisted of two lines of Arabic characters, interrupted in the centre by an ornamental portion. In the upper line, beginning on the right-hand side, the words *Bismi-lláhi-r-rah-máni-r-* are plainly seen; and at the termination of the same line, on the left-hand side, appears to be the word *Allah*. In the lower line, also, the Arabic characters are distinctly visible; but the whole having been sculptured in a highly involved and elaborately ornamented style of writing, with the central part nearly effaced and the ornamental parts in some places remaining, while the radical forms of the letters themselves have disappeared, leaves what is left in a much more undecipherable state than if there had been nothing more inscribed than the simple letters themselves: so that, after all our trouble, we could ascertain nothing further than that the inscription was in the modern Arabic character. In the plan, the stone has been drawn as if in its original position, which faced the W.N.W. The circumstances connected with the history of its present position and broken state will be adverted to hereafter. It was supported in the manner of an architrave, on the sides, apparently, of a gateway of simple but massive architecture, and was elevated more than 13 feet above the level of the ground; but the foundation being buried in the general mass of ruins, its real height could not be exactly ascertained. The blocks of stone of which the pillars or sides of the gateway were built average 4 feet long by 3 feet square at the ends; and they were all so accurately squared, and so skilfully and smoothly hewn, that the surfaces of those which still retain their original position are in perfect opposition with one another.

Of the ornamental sculpture, which was all in the arabesque style, but little now remains among the ruins of El Balad. The place has been plundered of its principal pillars and ornaments, partly for the purpose of enriching the mosques of El Robât and Dirîz; and no doubt the mosque of Şallâlah possesses its share of them, for it will be seen hereafter that the last governor of Dhafar,* who lived at Şallâlah, was not more insensible to the beauties of the sculpture among the ruins of El Balad than he

* Sayyad Mohammed bin 'Ajeib, a native of Mokhá, and one of the famous 'Ajeib tribe on whom the Khaliph, in reward for their great services in Spain, bestowed the banner of the Royal Standard of that country, by which the tribe is still recognised, Forster's 'Geog. Arab.,' vol. i., page 4.

was averse to seize anything else that he thought worth possessing. Still, however, enough remains to give a fair idea of the costly sculpture with which many of the buildings were adorned, as well as the superior way in which the designs were executed. Those who built the city of El Balad, and those who worked out the designs of the architects, are no longer to be found in the district of Dhafár. They were evidently not the barbarous inhabitants of the southern coast of Arabia. The taste which is displayed in the elegance of the designs in the few specimens of sculpture that remain must have been brought from another country; and those who imported it were evidently from another country also, and one more civilized than the inhabitants of the south-eastern coast of Arabia could ever boast of. But to return to our subject. The arches on which the ceiling or flat roof (whichever it might have been) rested were semi-elliptical, and the pillars which supported them averaged 12 feet in height. The latter were finely proportioned, with round or octagonal shafts, and with handsome arabesque designs sculptured in bold relief on the four sides of both their capitals and bases, and in most instances hewn out of solid blocks of stone.

On the following day, after we had examined the ruins of El Balad, the commander of the "*Palinurus*" expressed a wish that I should visit the Sheikh of Diriz, as he had formerly shown much kindness to Lieutenant Cruttenden, I.N., when passing through that town; and as I had already made the acquaintance, and had accepted the hospitality of the Sheikhs of the other principal towns of Dhafár, it might have appeared invidious to have left out the Sheikh of Diriz; and in reality would have been, under the circumstances, highly uncourteous and ungrateful, more particularly at that time, when, from jealousy or disagreement, the inhabitants of one town durst not go to another without being attended by some of their friends or protectors, or by a guard. With this view, then, accompanied by an interpreter, I landed at the place where the boats were taking in water; and notwithstanding the entreaties of the people who were present from the towns of El Háfár and Şallálah, that we would not go to Diriz, and their absolute refusal to accompany us thither, urging as a reason that it was next to death to approach the place, we walked away to the town; and having found out the Sheikh's house, we were forthwith admitted, and shown up to the top of it, where we found the Sheikh in a long room which they call the *Kaşr* [castle] or palace, reclining on a couch. He was blind, aged, and infirm, but immediately called for assistance that he might rise to receive us. In a short time the long room was thronged with his family and visitors; and in the midst of every species of hospitality, with earnest solicitations to remain the

night, that we might be made more sensible of the great desire he had to show us every kindness in his power, I took the opportunity of obtaining from him, through the interpreter, the following scrap of history connected with the ruins of El Balad.

As the subject was one of great interest to the whole of the party present, seeing that in all probability it would lead to the history of the Sheikh's own family, whereby I should be made acquainted with his ancient descent, and thoroughly satisfied of his hereditary right and title to the sultanship and government of Dhafár, now divided among the petty Sheikhs or Hakims of each town in that district, all listened most earnestly and respectfully while the enfeebled old man summoned to his recollection and delivered to us the traditional history of El Balad and the subsequent rulers of the district of Dhafár.

Whether El Balad, "the city" *par excellence*, was in reality the ancient name of this place, or whether the real name has been lost, and the more modern one of El Balad has been found the most convenient term to supply the deficiency, I am unable to determine. Be this as it may, it appears to have been built about the middle of the sixth century of the Hijrah, by Mohammed bin Mohammed al Habzi, wazir of Mohammed bin Mohammed Min-kuár, the last member of that family who held the government of Dhafár.

According to the Sheikh of Diríz, the Minkuwi* family came originally from Balkkuwi about the commencement of the sixth century of the Hijrah, and first settled in a little town on the borders of Khór Rárie, 2 miles E. of Thákah, the remains of which are still visible. From thence they removed to Dhafár, where they appear to have acquired so rapid an ascendancy over the inhabitants that the chief of the family assumed the title of sultan of the district, and built a large town there, the remains of which, in the same style as those of El Balad, are scattered over a large area 1 mile inland from the shore, opposite the ruins of El Balad. Of this town I could obtain no further information than that which I have given, not even its name, which, if it had been known to any one present, would have been mentioned; for invariably, when, from the impaired state of his recollection, the old Sheikh could not immediately recall to his memory any particular name or event, some one among the assembly readily supplied the requisite information.

Of the Minkuwi family, Mohammed bin Mohammed Minkuwi was the last who held the government of Dhafár; and at his death he left two children, a son and a daughter, to the former of whom

* Min gui by the author, in two words—evidently by error: k is commonly pronounced g in this part of Arabia: Minkú is probably the name of some non-Arab place or person. They probably came from Mozambique.—See Journ. of R. G. S., iv. 121.

he bequeathed his fortune and the government of Dhafár, appointing Moḥammed bin Moḥammed al Habzí, then his wazír, to conduct the government of the district during his son's minority. Al Habzí, however, not contented with the regency, usurped the power that had been intrusted to him, and, proclaiming himself Sultan of Dhafár, built the city of El Balad in A.H. 555. After a reign of thirty years he was succeeded by his son, who held the government for about the same space of time. Subsequently to this, one Shamsu-d-dín came from Şan'á and took possession of all the coast from Cape Sherbedát to Hisn Ghoráb, and the last of his line appears to have been Sultán Ibráhim, from whom the kingdom was taken by Sultán 'Alí bin 'Omár al Katherí, a native of Hadramaút, who, bringing half his army (consisting of 20,000 men) by sea, and the other half by land, disembarked and encamped at Binder Risút, in the district of Dhafár, whither Sultán Ibráhim, for the purpose of ascertaining the strength of his army, visited his camp in the disguise of a dervish. Intimation of this was, however, conveyed to the Hadramautic chief, and, when the pretended dervish asked for alms, poison was mixed with the food that was given to him, and, having eaten of it, he immediately expired, leaving Sultán 'Alí to take possession of his kingdom unopposed, which at that time consisted of all the country on the coast between Cape Sherbedát on the east and Hisn Ghoráb on the west; and to this the Hadramautic chief added all that part of the interior which intervened between these two points and Hadramaút.

It is from Sultán 'Alí bin 'Omar al Katherí that the present Sheikh of Diriz derives his descent and title to the sultanat of Dhafár. For many generations it continued uninterruptedly in the hands of his ancestors, the names of all of whom, in their order of succession, he carefully detailed to us down to Tálib bin 'Omar, whose government was confined to that part of the coast between Cape Shebedát on the east, and Jádib, a town in the bay of El Kamar, on the west. At his death, the right of succession becoming disputed, forty years elapsed, during which all the towns were governed by independent Sheikhs or Hakíms, until Sayyad Moḥammed bin 'Ajeib, of the famous tribe of 'Ajeib, a pirate on the Red Sea and the southern coast of Arabia, and no doubt well acquainted with the political state of each district on the coast, as well as with the relative value of their produce and their revenues, settled at Şallálah in Dhafár, and soon gained a supremacy over all the towns between Morbát on the east and Ras-al-Aḥmar on the west, inclusive. For twenty years he successfully kept the government of this district in his own hands, when his career was terminated by a sudden catastrophe. One of the Bení Gharrah tribe, who possess the mountainous district behind Dhafár, seized the opportunity of assas-

sinating him when at a distance from the towns, in revenge for the death of a relation who had been murdered by one of the Sayyad's slaves; and since that time, now fourteen years ago, the principal men of each town have again asserted their former independency, and, as a natural consequence, a jealousy has arisen between the towns, which has ended in a mortal hatred between their respective inhabitants, insomuch that no one now dares go from one town to another without being accompanied by a protector or a guard; while the fertile district of Dhafâr has been, and is now, frightfully laid waste by this state of anarchy.

The appearance of many parts of the fortifications of El Balad betokens an unfinished state, as if some sudden check had been given to their progress. This is particularly seen in the remains of the foundation of the thick wall which was to have been continued from the south-eastern angle along the southern side of the garrison to the base of the first large tower, which we have seen extended out towards the sea. Here it is evident that the work was never carried beyond its present state, or the wall would have almost been buried in its own ruins now, where, comparatively speaking, a loose stone hardly exists beyond those that mark the contour of the intended fortification, forming a great contrast with the remains of the towns, and the wall continued on from its western termination, where the original position and form can with difficulty be distinguished from the surrounding mass of ruins, and where, after a short distance, it becomes altogether obscure and buried under them. Moreover, from the eastern termination of that part of the wall which was completed, there are the remains of a thick wall which extended directly across the parallelogram to the khôr on the opposite side, about 800 yards from the north-western angle, and, as the ruins now bear testimony, it was between this wall and the western side that the principal part of the buildings within the fortifications were included. From this it would appear that at first the fortified portion was limited eastwardly by this wall, and that subsequently it was intended that the other portion should be taken in as far as the eastern branch of the khôr, but through some interruptions the design, though commenced, was never completed, and the foundation of the wall still remains little altered from what it probably was in the first instance. Additional evidence of this nature may be drawn from the present state of the quarries in the plain of Dhafâr, from which the stone for the building and fortification of El Balad was excavated, where rows of large blocks are still left standing, squarely hewn, and detached on every side, except their base, from the parent rock, ready to be transported to their place of destination, but now left as lasting memorials of the disappearance of the civilized people who were about to make use of them.

We were informed by the Sheikh of Darîz that Shamsu-d-dîn,

who came from Šan'á, had erected seven arches similar to the remains of that one which is now seen among the ruins of El Balad, and that it was no part of the original buildings of that city, nor does the colour of the stone or the weather-worn state of it correspond with that of the pillars and other parts of the ruins of El Balad; it has a more modern appearance. He also added that the only one of the seven he had ever seen was the one in question, and the destruction of this had been effected by a party of Arabs whom Sayyad Moḥammed-bin-'Ajeib had employed to remove the great stone containing the inscription to Sallálah, in doing which, from want of proper machinery, it had been thrown down and broken, and, no longer being fit for the purpose for which the said Sayyad had designed it, the project was abandoned, and the broken slab left at the foot of the pillars which supported it, where it still remains.

So far as regards a people like the Bedouins or the inhabitants of this coast, the ditch of El Balad, with its walls, all of which might be repaired at a trifling expense from the old materials on the spot, would, and no doubt did, form as secure a position as could be needed. The plain of Ḍhafár behind, the whole of which might be brought into a rich state of cultivation, could be protected to a considerable extent against the plundering incursions of the Bedouins by guns in the fortifications, while the ditch would afford an ample supply of fresh water, and the nearness of the garrison to the sea would enable it to be provisioned at pleasure, especially as the Bander of Kushút is close by, where a moderate-sized vessel may be completely sheltered from the prevailing winds of this coast.

The central position of El Balad on the south-eastern coast of Arabia, the fertility of the district in which it is situated, its proximity to Hadramaut, and its position as a post on the coast of that country in which the frankincense-trees are so abundant, together with many other medicinal gums that might be collected in vast quantities among the mountains of the same district, but which are all now regarded by the inhabitants as useless, from the want of some safe place of exchange or sale for the produce of their labour as well as the protection of their property;—with all these advantages, under a good government, the walls of El Balad might again show themselves above the waters in the centre of the district of Ḍhafár, as they formerly did when the Minkuwi family found the trade of this locality sufficiently lucrative to enable them to build the city and town which have just occupied our attention.

IX.—*Considerations against the supposed Existence of a great Sea in the Interior of Australia.* By Mr. E. J. EYRE. Read 23rd June, 1845.

[It is not often that matters of mere conjecture are admitted into the *Geographical Journal*; but while on the one hand it was declared on the formation of the Society that "great benefits have been, and may yet be, derived from speculative geography, and that, accordingly, theories which do not involve absurdities and impossibilities, but are supported by reasonable probabilities, are proper subjects for admission into the proceedings of the Society;" so on the other, the nature of the interior of Australia has been deemed a problem of such interest, as, in the absence of direct observation, to warrant the insertion in our publication of the conjectures of one who himself has explored in the country and given the subject his serious consideration.—Ed.]

THE continent of Australia—for, from its magnitude and growing importance, it may well deserve that appellation—is, perhaps, less known than any of the other quarters of the habitable globe. With our colonies implanted upon the four opposite points of its shores, we have not yet examined the whole of its coast-lines, whilst our researches inland have been carried to comparatively but a very little distance.*

Much, it is true, has of late years been done towards extending our knowledge of this singular country; various land expeditions, and the careful examinations and researches made by H. M. S. "Beagle" along the north-western and northern shores, have partially developed many interesting and important features connected with the character and formation of Australia.

Much, however, still remains to be done; a great portion of the north-eastern coast, and the eastern side of the Gulf of Carpentaria, is still, I believe, unexamined, whilst the true nature of the interior is altogether unknown.

The nearest approaches that have hitherto been made, and the lights that have been thrown upon the subject by various travellers, upon their attaining the confines of these unexplored recesses, have but added still more to the mystery and interest with which they are invested.

It is to be hoped that the expedition which is now absent, under the command of my gallant and talented friend Captain Sturt, will be crowned with that success which his enterprise and exertions so well merit;† but in the absence of any certain

* This paper was written previous to the publication of Captain Stokes's valuable narrative of 'Discoveries in Australia,' in which the coasts of the island are so fully described. The results of Captain Sturt's and Dr. Leichardt's extensive explorations into the interior were also unknown when the present memoir went to press.—Ed.

† A portion of Captain Sturt's narrative of his expedition has been obligingly communicated to the Geographical Society by Her Majesty's Government; the concluding

information as to what the interior of New Holland may in reality consist of, I have thought it might not be uninteresting to throw together some few remarks that have occurred to me in the course of my own travels and experience, and which may perhaps afford some new observations as data from which to reason, in endeavouring to deduce a probable inference as to the nature of the parts which are not known from the character and formation of those with which we are better acquainted.

In entering upon this subject, it is not without great diffidence that I venture to hazard an opinion which I know to be at variance with that generally received, and more especially so when I find the popular opinion is supported by the authority of such men as Captain Sturt, Mr. Windsor Earl, and others whose talents and scientific acquirements may justly give weight to any conclusions they arrive at.

It is usually believed that the vast continent of Australia is, comparatively speaking, little more than a narrow crust or barrier intervening between an outer and an inner sea, and that the great mass of the area which is thus enclosed consists of waters.

This opinion originated in the first instance with Captain Flinders, whilst sailing round those extraordinary cliffs bounding the Great Australian Bight. It has since been adopted by many subsequent writers or travellers, and is supposed to have been confirmed by a variety of facts and circumstances which have from time to time been brought to light by different explorers; and more recently, the last despatches received from Captain Sturt, in November, 1844, would appear almost to have put this question beyond all doubt, and to have announced to the world that the inland sea had actually been discovered.

That there is something very singular and unusual in the nature and formation of Australia, we have many and strong reasons for believing, as well as that it is unlike any other part of the world in its geographical character and features.

I have never, however, myself, in the course of my personal researches, met with any circumstances at all calculated to impress me with the belief that there at present exists in the interior an extensive, and still less a deep navigable sea; on the contrary, I have become acquainted with many facts which have led me to deduce the very opposite conclusion.

One of the strongest arguments in favour of the theory of an inland sea, and certainly one of the most surprising and inexplicable points connected with the geography of Australia, consists in the circumstance of there being, with the exception of the

part not having yet reached England, it is feared we shall be unable to publish this interesting paper in the present volume.—Ed.

Murray, no large or important river discharging into the sea, on the eastern, southern, or western coasts, to the southward of a line drawn from Moreton Bay to Shark's Bay (and which embraces one-half of the whole continent); none, in fact, which takes its rise beyond the secondary ranges of the coast, none which affords an outlet for any of the drainage of the interior.

Again, for a considerable portion of this distance along the southern coast, or from Mount Arden, at the head of Spencer's Gulf, to the 123rd degree of east longitude, extending over fully 800 miles of coast-line in direct distance, I did not, in crossing, meet with a single river, stream, pool, or watercourse of any description, nor did I find a spring (if I except a solitary one sunk in the rock near Streaky Bay) which afforded a drop of permanent surface water throughout the whole of that dreary and inhospitable region. My party were dependent for their lives upon the supply of water which could be procured by digging, and even by that means it was frequently impossible to obtain any for distances of 150 to 160 miles together.

The whole country, with the exception of the Gawler Range (which lies between Mount Arden and Streaky Bay), was one almost uniform table-land of fossil formation, varied only on its surface by occasional sandy or rocky undulations, and being for the most part densely covered with scrub. The general elevation of this region, as nearly as I could ascertain in the absence of any instruments for determining it with accuracy, appears to be from 300 to 400 feet above the ocean. What then can there be behind so singular a table-land, and which continues uninterrupted for such an immense distance?

The opinion at which I have myself arrived is, that the interior will be found generally to be of a very low level, to consist of arid sands, alternating with many basins of dried-up salt lakes, or such as are covered only by shallow salt water or mud, as is the case with Lake Torrens. It is more than probable that there may be many detached and even high ranges, similar to the Gawler Range, interspersed among these arid wastes, and it is very possible that, among these ranges, intervals of a better, or even of a rich and fertile country might be met with.

The suggestion thrown out by Captain Sturt a few years ago, that Australia might formerly have been an archipelago of islands, appears to me to have been a happy idea, and to afford the most rational and satisfactory way of accounting for many of the peculiarities observable upon its surface, or in its structure, as far as known. That it has only recently (compared with other countries) obtained its present elevation, is often forcibly impressed upon the traveller by the appearance of the country he is traversing, but no-

where have I found this to be the case in a greater degree than whilst exploring that part of it north of Spencer's Gulf, where a great portion of the low lands, intervening between the base of Flinders Range and the bed of Lake Torrens, present the appearance of a succession of rounded undulations of sand or pebbles washed perfectly smooth and even, looking like waves of the sea, and seeming as if they had not been very many centuries deserted by the element that had moulded them into their present form.

In this singular district I found, scattered at intervals throughout the whole area enclosed by, but south of, Lake Torrens, many steep-sided fragments of a table-land, which had evidently been washed to pieces by the violent action of water, and which appeared to have been originally of nearly the same general elevation as the table-lands to the westward.

It seems to me that these table-lands have formerly been the bed of the ocean, and this opinion is fully borne out by the many marine remains, fossil shells, and banks of oyster-shells, which are frequently to be met with imbedded in them. What are now the ranges of the continent would therefore have formerly been but rocks or islands, and, if this supposition be true, there are still hopes that some other islands were scattered over the immense space occupied by Australia, and which may be of as rich and fertile a character as any that are yet known.

Thus, if the intervening extent of desert lying between any of the known portions of Australia and what may be considered as having been the next island, can be ascertained and crossed over, other new and valuable regions may yet be offered for the extension of the pastoral interest of our Australian colonies, and for the general spread of civilization and improvement.

I have already observed that several circumstances connected with my own personal experience have led me to the conclusion that there is no inland sea now occupying the centre of New Holland. It will be sufficient to name three of the most important of these:—

First. I may mention the hot winds, which in South Australia, or opposite the centre of the continent, always blow from the north. To those who have experienced the oppressive and scorching influence of these winds, which can only be compared to the fiery and withering blasts from a heated furnace, I need hardly point out that there is little probability that such winds can have been wafted over a large expanse of water.

Secondly. I may state that between the Darling River, and the head of the Great Australian Bight, I have at various points come into friendly communication with the aborigines inhabiting the outskirts of the interior, and from them I have invariably

learnt that they knew of no large body of water inland, fresh or salt—that there were neither trees nor ranges, but that all is an arid waste, as far as they were accustomed to travel.

Thirdly. I infer the non-existence of an inland sea from the coincidence observable in the physical appearance, customs, character, and pursuits of the aborigines at opposite points of the continent; whilst no such coincidence exists along the intervening lines of coast connecting those points.

With respect to the first consideration, it is unnecessary to add further remark. As regards the second, I may state that, although I may sometimes not have met with natives at those precise spots which might have been best suited for making inquiry, or although I may sometimes have had a difficulty in explaining myself to, or in understanding, a people whose language I did not comprehend, yet such has not always been the case; and on many occasions I have had intercourse with natives at favourable positions, and have been able quite intelligibly to carry on any inquiries. One of these opportunities occurred in the very neighbourhood of the hill from which Mr. Poole is said to have seen the inland sea, as described in Captain Sturt's despatch. I have three reasons therefore for supposing Mr. Poole to have been deceived in forming an opinion of the objects which he saw before him from that elevation. First, I know from experience the extraordinary and deceptive appearances that are produced in such a country as Mr. Poole was in, by mirage and refraction combined. I have often myself been very similarly deceived by the semblance of hills, islands, and water, where none such existed in reality. Secondly, in December, 1843, I was within 25 miles of the very spot from which Mr. Poole thought he looked upon a sea, and I was then accompanied by natives, and able, by means of an interpreter, to communicate with those who were acquainted with the country to the N.W. My inquiries upon this point were particular, but they knew of no sea. They asserted that there was mud out in that direction, and that a party would be unable to travel; from which I inferred, either that some branch of the Darling spread out its waters there in time of flood, or that Lake Torrens itself was stretching out in the direction indicated. Thirdly, I hold it physically impossible that a sea can exist in the place assigned to it, inasmuch as, during an expedition undertaken by the Surveyor-General of the colony, in September, 1843, that officer had attained a position which would place himself and Mr. Poole at two opposite points upon nearly the same parallel of latitude, but about 130 miles of longitude apart, in a low level country, and in which, therefore, the ranges of their respective vision, from elevations, would cross each other, and, if there was a sea, Captain Frome must have seen it as well as Mr. Poole. Again,

I myself had an extensive and distant view to the N.E. and E. from Mount Hopeless, a low hill about 90 miles farther north than Captain Frome's position, but a little more east, yet there was nothing like a sea to be seen from thence, the dry and glazed-looking bed of Lake Torrens alone interrupting the monotony of the desert.

There are still some few points connected with our knowledge of the outskirts of the interior which leave great room for speculation, and might lead to the opinion that it is not altogether a low or a desert region.

These facts, which have more immediately come under my own observation, are connected, first, with the presence of birds belonging to a higher and better country in the midst of a desert region; and secondly, with the line of route taken by the aborigines in spreading over the continent, as deduced from the coincidence or dissimilarity of the manners, customs, or languages of tribes remotely apart from one another.

With respect to the presence of birds in a region such as they do not usually frequent. I may state, that at Mount Arden, near the head of Spencer's Gulf, swans were seen taking their flight high in the air to the north, as if making for some river or lake they were accustomed to feed at. At the Frome River, where it spreads into the plains to the north of Flinders Range, four white cockatoos were found flying among the trees, although these birds had not been met with for 200 miles before I attained that point; and about longitude $128^{\circ} 20' E.$, when crossing over towards King George's Sound, large parrots were found coming from the N.E. to feed upon the berries of a fruit growing on the sea-coast, although no parrots were seen for 200 or 300 miles on either side, either to the east or to the west. They must therefore have come from the interior. Now, the parrot is a bird that often frequents a mountainous country, and always inhabits one having timber of a better description and larger growth than the miserable shrubs met with along the coast. It is a bird, too, which always lives within reach of permanent fresh water, as rivers, lakes, creeks, pools, &c. Can there then be such inland sea with so barren and arid a region bounding it? and how are we to commence an examination with so many difficulties and embarrassments attending the very outset?

The second series of facts which have attracted my attention relate to the aborigines. It is a well-known circumstance that the dialects, customs, and pursuits in use among them in the various parts of the continent differ very much from each other in some particulars, and yet that there is such a general similarity in the aggregate as to leave no room to doubt that all the aborigines of Australia have had one common origin, and are in reality

one and the same race. Captain Flinders observed the difference of customs and language to which I have alluded as existing in various parts of New Holland which he visited; and yet that judicious navigator inclined to the opinion that all the various tribes had one common origin. Vol. ii. p. 213-214, he says, "I do not know that the language of any two parts of Terra Australis, however near, has been found to be entirely the same; for even at Botany Bay, Port Jackson, and Broken Bay, not only the dialect but many words are radically different, and this confirms one part of the observation, the truth of which seems to be generally admitted, that, although similarity of language in two nations proves their origin to be the same, yet dissimilarity of language is no proof of the contrary position. The language of Caledon Bay (N.W. coast) may therefore be totally different from that spoken on the east and south coasts, and yet the inhabitants have one common origin; but I do not think that the language is absolutely and wholly different, though it certainly was no better understood by Boongaree (a Sydney native) than by ourselves. In three instances I found a similarity. The personal pronoun of Port Jackson, 'Ngia' (I), was used here, and apparently in the same sense. When inquiry was made after the axe, the natives replied 'Yehangereepy,' making signs of beating, and 'py' signifies to beat, in the Port Jackson language. The third instance was of the lad Wogan calling to Boongaree in the boat, which after he had done several times without being answered, he became angry, and exclaimed 'Boongareegah' in a vehement manner, as Boongaree himself would have done in a similar case."

Captain Grey, speaking of the aborigines of New Holland, says, (vol. ii. p. 209,) "One singularity in the dialects spoken by the aborigines in different portions of Australia is, that those of districts widely removed from one another sometimes assimilate very closely, whilst the dialects spoken in the intermediate ones differ considerably from either of them.* The same circumstances take place with regard to their rites and customs."

And again, after comparing some of the dialects of South Australia and of Sydney with those of Western Australia, Captain Grey says, (vol. ii. p. 216,) "Having thus traced the entire coast-line of the continent of Australia, it appears that a language, the same in root, is spoken throughout this vast extent of country; and from the general agreement in this, as well as in personal appearance, rites, and ceremonies, we may fairly infer a community of origin for the aborigines."

Had we a collected and an authentic account of the dialects,

* See also Captain Grey's paper on the Languages of Australia, *Geogr. Journ.*, vol. xv. p. 365.—Ed.

habits, weapons, customs, and traditions of all the tribes of Australia with whom Europeans have already been in close or friendly contact, and which, with very few exceptions, would embrace the circuit of the whole continent, we should have a mass of valuable and interesting information that would enable us not only to form a probable opinion as to the community of origin of the various tribes, and the point from which they first overspread the continent, but to guide us in conjecturing the routes which the various offsets have taken from the parent tribe, the places of contact at which they have met from opposite extremities of the continent, and the gradual change which has taken place in the habits, customs, and dialects of each.

In the absence of many links necessary to form a connexion, we can, at present, only surmise conclusions which otherwise might have been almost certainly deduced. Connecting, however, and comparing all the facts with which we are acquainted respecting the aborigines, it appears that there are still grounds sufficient to hazard the opinion, that it is not improbable that Australia was first peopled on its north-western coast, between the parallels of 12° and 16° south latitude. From thence we might surmise, that three grand divisions had branched out from the parent tribe, and that from the offsets of these the whole continent had been overspread.

The first division appears to have proceeded round the north-western, western, and south-western coast, as far as the commencement of the Great Australian Bight. The second or central one appears to have crossed the continent inland to the southern coast, striking it about the parallel of 134° east longitude. The third division seems to have followed along the bottom of the Gulf of Carpentaria to its most south-easterly bight, and then to have turned off by the first practicable line in a direction towards Fort Bourke, upon the Darling. From these three divisions various offsets and ramifications would have been made from time to time as they advanced, so as to overspread and people by degrees the whole country round their respective lines of march, each offset appearing to retain fewer or more of the original habits, customs, &c., of the parent tribe, in proportion to the distance traversed, or its isolated position with regard to communication with the tribes occupying the main line of route of its original division; modified also, perhaps, in some degree, by the local circumstances of the country through which it may have spread.

Commencing with the parent tribe located, as I have supposed, first upon the north-west coast, we find, from the testimony of Captain Flinders and Dampier, that the male natives of that part of the country have two front teeth of the upper jaw knocked out at the age of puberty, and they also undergo the rites of circum-

cision; but it does not appear that any examination was made with sufficient closeness to ascertain whether the ceremony of initiation,* as practised at the head of the Great Bight and in the Port Lincoln Peninsula, was conjoined with that of circumcision. How far these ceremonies extend along the north-western coasts we have no direct evidence; but at Swan River, King George's Sound, and Cape Ariel, both customs are completely lost; and for the whole of the distance intervening between these places, and extending fully 600 miles in straight lines along the coast, the same language is so far spoken, that a native of King George's Sound, who accompanied me when travelling from one point to the other, could easily understand and speak to any natives he met with. This is, however, an unusual case; nor, indeed, am I aware that there is any other part of Australia where the same dialect continues to be spoken by the aborigines with so little variation for so great a distance as in the colony of Western Australia.

Following round the southern coast easterly, the head of the Great Bight is the first point at which any great change appears to occur; and even here it is less in the character, language, and weapons of the natives, than in their ceremonial observances. For the first time the rite of circumcision is observed, and conjoined with it the still more extraordinary practice to which I have before alluded. The ceremony of knocking out the two upper front teeth of boys arrived at the age of puberty is not however adopted.

We have already noticed, that for 600 miles to the west and north-west of the Great Bight circumcision is unknown. The tribes, therefore, who practise it cannot have come from that direction, neither are they likely to have come from the eastward, for after crossing the head of the Port Lincoln Peninsula, and descending towards Adelaide, we find the rite of circumcision alone is practised, and not that of the other ceremonial I have alluded to in connexion with it. Now, in a change of habits or customs originating in the wandering unsettled life of savages, it is very likely that many of their original customs may gradually be dropped or forgotten; but it is scarcely probable that they should be again revived by their descendants after a long period of oblivion, and when those tribes from whom they more immediately proceeded no longer remembered or recognised such ceremonials.

By extending the inquiry still farther to the east, the position I have assumed is more forcibly borne out, for the rite of circumcision itself then becomes unknown. It is evident, therefore, that the Adelaide or Port Lincoln natives could not have come along

* This ceremony consists in slitting the penis completely open from one end to the other, on the under side; and is practised, at the age of from ten to fourteen, upon all males.

either the eastern or western coast and retained customs that were there quite unknown, neither could they have come across the country inland in the direction of the Darling, for the ceremonies alluded to are equally unknown there.

They must, therefore, have crossed almost directly from the north-western coast towards the south-eastern extremity of the Great Australian Bight, and from them the Adelaide natives would appear to be a branch or offset. Returning to the north-west coast, and tracing down the route of the third division of the parent family from the south-east Bight of Carpentaria towards Fort Bourke upon the Darling, we shall find that by far the greatest and most fertile portion of New Holland appears to have been peopled by it. In its progress, offsets and ramifications must have branched off in every direction along the various ranges or watercourses contiguous to the line of route. All the rivers running towards the eastern coast, together with the Nammoy, the Gwyder, the Castlereagh, Macquarie, Bogan, Lochlan, Darling, Hume, Goulburn, &c., with their many branches and tributaries, would each afford so many routes for the different subdivisions of the main body to spread over the varied and fertile regions of Eastern, South-Eastern, and part of Southern Australia.

As tribe separated from tribe, each would retain, in a greater or less degree, some of the language, habits, or customs of the parent family; but such points of resemblance would naturally again undergo many changes or modifications, in proportion to the time, distance, or isolated character of the separation. If we look at the progress of any two parties of natives branching off upon different rivers, and trace them either upwards or downwards, we shall find that the farther they go the more isolated they would become, and the less likely to come again in contact with each other, or with the original division from which they separated.

We may, therefore, naturally expect a much greater variety of dialects or customs in a country that is much intersected by rivers or ranges, or by any features that tend to produce the isolating effect that I have described, than in one whose character has no such tendency; and this, in reality, we find to be the case.

In Western and South-Western Australia, as far as the commencement of the Great Bight, the features and character of the country appear to be but little diversified, and here, accordingly, we find the language of the natives radically the same, and their weapons, customs, and ceremonies very similar throughout its whole extent; but if, on the other hand, we turn to Eastern, South-Eastern, and part of Southern Australia, we find the dialects, customs, and weapons of the inhabitants almost as different as the country itself is varied by the intersections of ranges and rivers.

The division I have supposed as taking a south-easterly course from the Gulf of Carpentaria would appear early to have lost the rite of circumcision, but to have retained among some of its branches the practice of knocking out the front teeth of the upper jaw. Thus, those which made their way to Port Jackson, to Hunter's River, and to some of the southern parts of New South Wales, still retained the custom of knocking out one of the front teeth at the age of puberty; but at Keppel's, Hervey's, and Glass House Bays on the north-east coast, at Twofold Bay on the south-east, at Port Philip on the south, and upon the lower parts of the rivers Darling and Murray, of the interior, no such rite is practised. It is clear, therefore, that when the continent was first peopled the natives of Sydney or Hunter's River could not have come round the north-east coast by Keppel's or Harvey's Bays, and retained a ceremony that is there lost; neither could the Murrumbidgee, or southern districts of New South Wales, have been peopled from Port Philip or from South Australia, or by tribes passing up the Murray, for the same reason. It is not demanding too much, therefore, to suppose that the general lines of route taken by the aborigines in spreading over the continent of Australia have been somewhat analogous to those I have imagined, or to assume that we can fairly account for any material differences there may be in the dialects, customs, or weapons of the different tribes, by referring them to the effect of local circumstances, to the length of time that may have elapsed since separation, and to the isolated position in which they may be placed with regard to that division of the parent tribe from which they had seceded.

At present, our information respecting the customs, habits, weapons, and dialects of the native tribes, is too limited and too scattered to enable us to trace with accuracy the division to which each may have originally belonged, or the precise route by which it had arrived at its present location; but I feel quite confident that this may be done with tolerable certainty when the particulars I have referred to shall be more abundantly and correctly recorded.

It is at least a subject of much interest, and one that is well worthy the attention of the traveller or the philanthropist (ethnologist?). No one individual could hope, personally, to collect the whole material required; but if each recorded with fidelity the facts connected with those tribes with whom he personally came in contact, a mass of evidence would soon be brought together that would more than suffice for the purpose required.

The third reason I have mentioned, as being one from which I infer that there is not an inland sea, viz. the coincidence observable in the physical appearance, customs, character, and pursuits of the aborigines at opposite points of the continent, whilst no such coincidence exists along the intervening lines of coast con-

necting those two points, naturally follows from the circumstances connected with the present location of the various tribes in which this is observable, and with the route which they must have taken to arrive at the places they now occupy on the continent.

I believe that the idea of attempting to deduce the character of the continent, and the most probable line for crossing it, from the circumstances and habits of the natives inhabiting the coast-line is quite a novel one.

It appears to me, however, to be worth consideration; and if it be true that the natives have all one common origin, and have spread over the continent from one first point, I think it may reasonably be inferred that there is a practicable route across the centre of New Holland, and that this line lies between 125° and 135° of east longitude.

It further appears, that there must still be a second route, other than the coast-line, in the direction between Port Jackson in New South Wales, and the south-east corner of the Gulf of Carpentaria on the north coast.

If then we have reasonable grounds for believing that such lines of route actually do exist, it becomes a matter of much interest and importance to determine the most favourable point from which to explore them.

My own experience has shown the dreadful nature of the southern coast, and the very great and almost insuperable difficulties that beset the traveller in the very commencement in his efforts even to establish a single dépôt from which to enter upon his researches.

The northern coast may probably afford greater facilities, but in a tropical climate, where the heat and other circumstances render ordinary difficulties and impediments still more embarrassing and dangerous, it is matter of deep moment that an expedition should commence at the right point, and this can only be ascertained by previous examination.

I have myself always been most anxious to attempt to cross from Moreton Bay on the north-east coast to Port Essington on the north-west.* I believe that this journey is quite practicable; and I have no doubt that, if judiciously conducted, and the country to the south of the line of route always examined as far as practicable, it would completely develop, in connexion with what is already known, the character and formation of Australia, and would at once point out the most proper place from which a subsequent expedition ought to start, in order finally to accomplish the passage across the interior.

* This exploration has now been most satisfactorily effected by the persevering enterprise of Dr. Leichardt and his party.—Ed.

X.—*Account of Dr. LUDWIG LEICHARDT's Expedition from Moreton Bay to Port Essington, Australia.*

[Although an account of Dr. Leichardt's Expedition has already appeared in print, it has been deemed advisable to give it in the Geographical Journal, whose readers would be naturally disappointed at not finding in it the relation of so extraordinary and successful an exploration.—ED.]

DR. LEICHARDT, a visitor in New South Wales, a man of science and enterprise, conceived the idea of making an overland journey from Moreton Bay, the most northern British settlement on the coast of New South Wales, to the Gulf of Carpentaria. The project, on account of its prospective utility, was applauded; but, owing to the distance of the Gulf, and peculiar danger of the enterprise, coupled with the absence of support from the local government, it was not encouraged by Dr. Leichardt's friends with any ardour. But, the doctor having resolved on the expedition, a number of friends subscribed in aid of the outfit, few of them, however, expecting that he would return alive. He started from the stock station the farthest from the town of Brisbane, in the settlement of Moreton Bay, in October, 1844, and arrived safe with his party (save Mr. Gilbert, who was killed by the natives when the expedition had nearly reached the N. coast) at Port Essington, about three hundred miles west of the Gulf of Carpentaria, in November, 1845, this surpassing journey having occupied about thirteen months. Dr. Leichardt's success was not learnt in Sydney until the 25th of March, 1846, when, to the astonishment and delight of that city, he suddenly made his appearance there, having arrived on the morning of that day in a vessel from Port Essington. The following is a brief journal of the doctor's travels, which was published the next day in the Australian and Herald newspapers. Considering the rich fields of agricultural speculation his journey opens to the colonists, the modesty of the traveller is as conspicuous in this outline of his labours, as his indomitable perseverance in accomplishing an enterprise which, under all circumstances, borders, in its conception and execution, on the marvellous, is beyond all praise.

I left Sydney, says the traveller, the 13th of August, 1844, in the "Sovereign," Captain Cape, the Hunter River Steam-Navigation Company having given to me and to my party a free passage to Moreton Bay. After recruiting my horses at Moreton Bay, I went up to Darling Downs, and stayed for a month at Mr. Campbell's station, waiting for my provisions, which the kind people of Moreton Bay had volunteered to send up to the

Downs with drays. Finding that my horses were not sufficient to move all the provisions, and considering that bullocks could not only transport them, but would also form a good stock of provisions themselves, I bought three from Major North, at Laidley Plains, and five from Mr. Hughes, at Darling Downs. My party consisted originally of six persons—Mr. Roper, Mr. James Calvert, John Murphy, Phillips, and the black fellow, Harry Brown, of Newcastle. In Moreton Bay, a negro, Caleb, and a black of Bathurst, Charley, joined me. At the Downs, Mr. Hodgson and Mr. Gilbert increased the number of my party to ten persons. The two latter added two bullocks to those I had, and Messrs. Stephens and Campbell made us a present of four young steers and a bullock. Mr. Isaacks gave a fat bullock. I started, therefore, from Jimba, the farthest station of Darling Downs to the westward, on the 1st of October, 1844, with 16 head of cattle, 17 horses, and 4 kangaroo-dogs. Mr. Hodgson and Caleb returned with 2 horses from Kent's Lagoon, about 70 miles from Jimba. We travelled at first through the system of waters of the Condamine, which river goes much farther to the northward than is laid down in the map, as I left it in about $26^{\circ} 44'$ S. I passed several creeks which evidently joined the Condamine, in lat. $26^{\circ} 26'$, and $26^{\circ} 16'$, and $26^{\circ} 10'$, in a course north-west from Jimba; and I have soon to mention that I came on westerly waters again, in lat. $25^{\circ} 19'$, and $25^{\circ} 13'$, which, in all probability, go to the westward and southward to join the Condamine, or belong to the great basin of the Darling.

After having passed the great plains of the Condamine, between Coxen's station, Jimba, and Russell's station, we entered a country which was alternately covered with fine open forest-land, well grassed and fit for cattle and horse-breeding, and with long stretches of almost impassable bricklow scrub, so called from the bricklow (a species of acacia) being one of its principal components. Open myall scrub was frequent, particularly along the Condamine. Though the bricklow scrubs were frequently of great length and breadth, I do not think that they ever form uninterrupted lines of more than twenty or thirty miles, so that they always admit of being skirted. The frequency of these scrubs, however, renders the establishment of stations unadvisable, as they offer a secure retreat both to hostile black fellows and to wild cattle.

Following a narrow passage through a very extensive bricklow scrub, over a flat country, I entered into a new system of waters, which at first turned to the north-north-west and north-west, but about 70 miles lower down, in lat. $25^{\circ} 36'$, turned to the north-east. I came upon it in lat. $26^{\circ} 4'$. I called the principal river "the Dawson." Fine flats extend along its banks, and at a distance

of some miles there are open ridges, with sound ground. Lower down, however, ranges appear covered with scrub, and I suppose that the river, where it turns to the north-east, enters into a rather mountainous country, to work its way into the flats of the east coast. A large creek joins it in lat. $25^{\circ} 34'$, which comes from the north-west, and I called it Palm-tree Creek, as fine corypha palms grew along its banks. It is accompanied by rich flats and fine ridges, and has a plentiful supply of water, in detached holes, as the Upper Dawson had. But these rich flats, which would delight the eye of the cattle-breeder, are limited towards the ranges by thick bricklow scrub. This scrub covers the hills to the southward between the creek and a long range, and is interrupted by plains almost entirely grown over with vervain, which made me call them "Vervain Plains," a name I gave to all similar spots, though less abounding with this plant.

In following up the creek, I came again upon a flat table-land, and on waters which turned to the south-west. Should the creek I met in lat. $25^{\circ} 29'$, and which I called "Robinson's Creek," belong to the Condamine, the shed of waters here would be one of the most curious which have ever been observed. The shallow channels which form the heads of Palm-tree Creek (an easterly water) are scarcely a quarter of a mile distant from the broad deep sandy bed of Robinson's Creek; the latter turning to the south-west, the former collecting towards the east. Several sedgy swamps and lagoons, covered with water-fowl, are found on the left bank of Robinson's Creek.

This creek comes from a hilly country, which, more to the north-west, rises into ranges of considerable elevation, giving birth to a great number of watercourses, creeks, and gullies, all collecting into Robinson's Creek. The whole country is openly timbered, the ridges at the upper part of it partially covered with silver-leaved iron-bark, and well adapted for sheep. Fine flats extend along its banks where I first met it, in lat. $25^{\circ} 28'$. I passed the principal range of Robinson's Creek in lat. $25^{\circ} 19'$, and came again to waters which turned to the west and south-west. In pursuing a north-west course, I entered into a knot of mountains, from which the waters flowed in almost every direction—to the east, north-east, north, west, and south. Only long and tedious reconnoitring enabled me to find a passage through this intricate country; and even this would have been perhaps unsuccessful, if Providence had not thrown some light on our dark and difficult path. In following a north-easterly creek to its head, I found an easy mountain-pass, and came on the heads of another creek going to the northward. These are in lat. $25^{\circ} 5'$. In lat. $24^{\circ} 54'$, the creek, which I called "Zamia Creek," from fine arborescent zamias (or cycas) growing on its flats, turns to the north-east. Its

deep channel gets very shallow as it enters a flat country of very great extent, almost unbounded by any rise towards the north-east. The creek is accompanied by small flats and thick scrub; but the flats extend more and more, and the scrub recedes, as it approaches the large flat country, which appears openly timbered, and well grassed in the proper season. When we went along it, the 4th—9th December, 1844, the grass was all burnt, and the country looked bleak, with some few exceptions of old burnings, which were covered with luxuriant grass. The creek had very little water in it.

I turned round a range at the left of Zamia Creek; its two most conspicuous mountains we had seen a long time before: the one, a sharp peak, covered with scrub, I called "Aldis Peak;" the other, dome-shaped, I called "Mount Nicholson." They are excellent landmarks, and must be seen for a great distance from the north-east. Their lat. is about $24^{\circ} 52' 30''$. The range to which they belong I called "Expedition Range."

Travelling along its eastern side, I crossed several creeks, the largest of which I named "Expedition Creek:" palm-trees were again frequent. Another creek, which, from abundance of erythrina-trees, I called "Erythrina Creek," was amply supplied with fine reedy water-holes. The country is openly timbered and well grassed; but I fear that all these creeks get very dry as they leave the mountains.

I crossed the range: the passage is very difficult. The stock of the range is basaltic; the spurs and subordinate ranges are sandstone. The basaltic part is openly timbered; arborescent zamias very frequent; the sandstone spurs are covered with scrub and underwood peculiar to this description of country. From the north-west side of this range a view opens over a large valley, bounded to the west and north-west by distant ranges, which I called the "Christmas Ranges." It is almost entirely filled with scrub, the extent of which was well calculated to try a man's courage. Some few plains were visible, and isolated hills rose in different directions out of this sea of scrub. The watercourses, very different from those of the other side of the range, were dry near the range, but contained fine water-holes within the scrub. (Lat. $24^{\circ} 45'$ —lat. $24^{\circ} 26'$.) I followed a watercourse through the scrub in a north-north-east direction, and came to open box flats and openly timbered basaltic ridges, which, however, soon changed again into scrub. The creek led me to a small river, lined with fine casuarinas and flooded gum. I called it "Comet River," as I saw the fine comet of the 29th of December, 1844, while travelling along its banks. It comes from downs and plains to the westward, and is accompanied by a narrow strip of open forest-land, hemmed in by scrub, which lower down takes entire possession of its banks,

until it joins a fine river (the Mackenzie) well supplied with water, its water-holes forming broad stretches of 2—3—10 miles, full of excellent and various fishes, and of fresh-water muscles, which appear to form the principal food of the natives. The Comet River is badly supplied with water. From lat. $24^{\circ} 25'$ to almost $23^{\circ} 41'$, its bed was entirely dry, small water-holes supplied by late thunder-storms assisting us to pass over this thirsty country. As it approaches the Mackenzie, the supply of water increases, and from lat. $23^{\circ} 41'$ to $23^{\circ} 34'$ numerous fine water-holes are found in the bed of the creek. The valley of the scrubs between Expedition and Christmas Ranges and the Comet River is not available for any pastoral purpose. The sportsman alone would be remunerated by rich sport in the detached patches of scrub, surrounded by vervain and sow-thistle plains which teem with kangaroos.

The Mackenzie comes from the westward. I should have followed it up to its head, if the scrub which lined its banks had not made it advisable to follow it down, in order to come to a more open country. The heads of the Mackenzie are, however, a very interesting point, as they will lead to a watershed between eastern and western waters. It is the only easterly water I passed, with the exception of Comet River, the heads of which remain unknown.

The Mackenzie winds through a peculiar country. Its valley is deep and narrow: on its left side extends a high level country with belts of scrub near the river, and, farther off, plains and open forest—generally box-forest; but these plains and open forest are again bordered by scrub. From time to time sandstone crops out in the deep-cut creeks which join the river, or in the banks of the river itself. In one of these sections several layers of fine coal were found, identical with the formation of the Newcastle coal. Rounded pieces of coal had been found in the bed of the river where we first came to it, evidently showing that the coal formation extends high up the river. The windings of the Mackenzie are numerous and large: it was difficult to make out its present course: lower down, however, it becomes more regular: it seems to enter the flats of the east, similar to those I mentioned at Zamia Creek; its course is north-east, according to the black fellows, who are very numerous, and behaved very friendly to us.

I do not think that the part of the Mackenzie we passed is well adapted for the establishment of cattle or sheep stations. The scrub is too frequent and too thick, but the water, the variety and richness of the grasses, the fine plains and open box-forest, are very inviting. I have reason to believe that the scrub is less frequent down the river.

At lat. $23^{\circ} 21' 30''$ I left the Mackenzie, and travelled again in

a north-west direction. In an extent of 25 miles we passed long stretches of thick scrub, of fine open narrow-leaved iron-bark forest, of box flats and plains; the last of a rich black soil, strewn over with pieces of fossil wood changed into ironstone and silex. Some of the finest country, covered with rich grass and herbs, and well watered; open forests and plains well stocked with game, and honey, sweet as that of Hymettus, the air fragrant with wild thyme and marjoram, extended for more than 25 miles, surrounded by dense bricklow scrub, and interrupted only by creeks which appear all to belong to the system of the Mackenzie. A fine range of peaks was seen from almost the only hill of this country, in a north-west direction. As I approached it, other lower ranges appeared, and two fine creeks, lined with casuarini, with reedy water-holes, running to the south-west, lay in our course. These creeks are accompanied by fine open box and narrow-leaved iron-bark flats, the latter, however, generally with rotten ground. I followed one of the creeks up to its head, and going up a sandstone spur, I came to a fine table-land, where plains with rich black soil, covered with luxuriant grass and herbs, were separated by narrow strips of sandy iron-bark forest. The plains enlarged as I advanced, and a series of magnificent cones and ranges rose from this level. I called this range "Peak Range," and gave to the most prominent peaks separate names. They are composed of domite, whilst the ridges to the east and south-east were of sandstone; and the ridges, varying the plains to the westward, of basalt. The latitude of Peak Range is $22^{\circ} 56' 54''$, its longitude about $148^{\circ} 19'$, E. The plains and downs extend far to the westward, where another range of peaks was observed. There was good water in a sandstone creek running to the south-west, with rocky water-holes; but the plains were badly watered. The young grass, late burnings, and smoke rising to the eastward of the range, showed evidently that this fine country was well inhabited: black fellows were even seen by some of the party. A closer examination would detect more water, and this procured, no country would be better adapted for pastoral purposes than the plains and downs of Peak Range, and the whole country to the eastward which I have seen.

Numerous creeks go down to the eastward, either coming from basaltic ridges, and winding through small plains of black soil, or from sandstone ridges passing along between them, until they enter a flat country to the east and north-east, which I have twice had occasion to mention. Many of these creeks are well provided with water-holes, though not near the range, but farther down. The water-holes are generally rocky basins.

I travelled through this country during January and February,

1845; there was no continuous rain, but only occasional thunder-showers, which frequently filled the empty water-holes, to give us a stepping-stone over a dry country.

I travelled from lat. $22^{\circ} 43'$ to lat. $22^{\circ} 23'$ in a northerly course, over sandstone ranges (spurs of the table-land), between which came down creeks, frequently accompanied by grassy plains, or a well-grassed open forest. The ranges were so rocky, and their slopes so steep, that I determined to follow down one of the easterly creeks, which I called "Hugh's Creek." Between the ranges it was well provided with fine water-holes; in the flat country, which it entered after leaving the sandstone ranges, it was almost entirely waterless. At the upper part of it the drooping tea-tree was first observed. We found it afterwards at every creek and every river; it was generally the companion of water, and its drooping foliage gave a rich shade.

The flat country which we had entered was covered with narrow-leaved iron-bark, with box, and a new species of gum, which we called poplar gum, as its leaf and foliage resemble very much in form and verdure the trembling poplar of Europe. The ground of the iron-bark forest is generally rotten; that of the box is sound, as the box grows on a stiff soil, which is also the case with the poplar gum. Patches of scrub appeared as we came lower down the creek—some puddled water-hole of the scrub gave us the necessary supply of water.

The flat country continued, the scrub increased, and formed belts of various breadth along the creek; fine open undulating country, interrupted, however, by bands of scrub, extends to the north and north-west.

This creek brought us to a river with a broad sandy bed and high banks lined by fine flooded gum-trees and casuarinas. It was entirely dry; but in a rushy swamp, parallel to its banks, fine water was found. I named this river the "Isaacks." From lat. $22^{\circ} 20'$ to lat. $21^{\circ} 35'$ we travelled along the Isaacks in a north-north-westerly course, following it up to its head.

The bed of the river was dry, with some few exceptions, until we came to the Sandstone Range near its head; black fellows' wells were frequent, and the existence of fine water-holes in a more favourable season was indicated by borders of reeds surrounding dry basins. The water-holes which supplied us with water were parallel to the river, or in little creeks adjoining it—the rain-water being collected in puddled basins; these water-holes were generally at the outside of scrubs.

In lat. $22^{\circ} 11'$ a range extends at the left side of the river, parallel to it. I named it "Coxen's Peak and Range." It forms an excellent landmark. The river breaks through two ranges, striking from north-west to south-east, and its heads are at the north side

of the most northern one, in an undulating country. Flats one and two miles broad accompany the river; a belt of scrub, sometimes very narrow, separates them from a more undulating or hilly open-timbered country farther off the river. Silver-leaved iron-bark is the prevailing timber of the hills and ridges. Between the two ranges of its upper course, plains extend, which, well provided with water, belong to the finest country we have met with, and are highly adapted for any pastoral purposes, particularly for the breeding of cattle and horses.

At the end of February and at the commencement of March we had for several days a drizzling rain.

From the heads of the Isaacks we came to small creeks collecting into a common watercourse, going at first to the northward, afterwards to the westward, and even to south-west. I called this "Suttor's Creek." Open iron-bark slopes and small plains render it very fit for cattle-stations; but, as the lower part of this creek, as well as the river which it joins, and which I called "The Suttor," got very scrubby, it may be rather considered as a continuation of the Isaacks, from which the access to it is very easy.

The river Suttor, which I followed down from lat. $21^{\circ}21'36''$ to $20^{\circ}37'13''$, has in its upper course fine reedy water-holes. The flats which accompany its banks are openly timbered, but they change with thick scrubs and rocky country. In lat. $21^{\circ}39'58''$ it splits into many branches, enters a thick scrub, and becomes deficient in water.

At lat. $21^{\circ}37'31''$, however, there is a most magnificent sheet of water, like a little lake. Between $21^{\circ}33'$ and $21^{\circ}32''$ it entirely disappears as a distinct watercourse, and forms chains of water-holes, which were, however, well supplied with water. The country opens at about $21^{\circ}20'$ —a big creek joining the Suttor from the south-east. Primitive rocks appear amongst sandstone rock, and a limestone hill was observed in lat. $21^{\circ}6'$. A river, as large as the Suttor, which I called the Cape, joins from the westward. It turns in lat. $20^{\circ}44'$ round a fine isolated mountain, which I named Mount Maconnel, and joins a running stream, with a bed one mile broad, which comes from the north-west, and turns to the eastward. I made my first camp in the bed of this river in lat. $20^{\circ}37'13''$, and called it "the Burdekin," as an acknowledgment of the liberal support which I received from Mrs. Burdekin in forming my expedition.

Fine flats accompany the Suttor in its lower course. The grasses are very various and dense; there is particularly one grass, the oaten grass of the Isaacks, which grows to a considerable height, and the stem of which is very juicy and sweet. But besides this, there are at least twenty different grasses, with various

herbs, which cattle and horses like to feed upon. Water in the Suttor is abundant, its water-holes are often long and broad, and covered with ducks, and it is even a running stream five miles above its junction with the Burdekin. The pandanus was first observed here; and in the bed of the river, round old fire-places of black fellows, we found the empty shell of the fruit of cycas, the tree of which we first observed at the Upper Burdekin. A new species of grevillea was also found, and the poplar-gum was frequent. The drooping tea-tree, which grows to a great size in the bed of the Suttor, yields an excellent timber. The blood-wood and iron-bark are generally of a good size for building huts; there was also no want of timber at the Isaacks, nor at the Burdekin.

I travelled along the Burdekin from lat. $20^{\circ} 37' 13''$ to lat. $18^{\circ} 32' 37''$, through $2^{\circ} 4' 36''$ of lat. in a north-west by west course, and I had to leave it, probably still about fifty or sixty miles distant from its head, as it turned too much to the northward and eastward. Almost the whole extent of its banks is available for pasturing purposes.

The character of the country is various; fine iron-bark and box flats, open ridges, high ranges off the river, sometimes approaching it, and rendering the passage very difficult. Those who follow me will find easier roads further from the river. The stream is supplied with abundance of water by living springs and brooks coming from a basaltic table-land; creeks provided with water-holes, with broad sandy beds lined with casuarinas, are numerous. At lat. $20^{\circ} 8' 26''$, at $20^{\circ} 0' 36''$, at $19^{\circ} 49' 91''$, at $19^{\circ} 13'$, at $18^{\circ} 59''$, at $18^{\circ} 52''$, large creeks and rivers join the Burdekin.

From the Suttor up to lat. $19^{\circ} 58' 11''$, the whole country is composed of granite and sienitic rock; pegmatite and hornblende rock are frequent. At $19^{\circ} 58'$, I first observed basalt: at $19^{\circ} 54'$, a fine limestone, with many fossil corals, crops out; but higher up the river basaltic ridges predominate, which are several times interrupted by quartz porphyry (lat. $19^{\circ} 18' 6''$; $19^{\circ} 13'$). Both rocks seem to have broken through talc-shiste, sandstone, and conglomerate.

In latitude $18^{\circ} 48' 9''$, we entered into a large valley with numerous lagoons, at the east side of which the river came down, whilst a reedy brook swept along the basaltic ridges which bounded it to the southward. The lagoons were covered by nymphæas (the lotus), the seed-vessels and rhizoma of which formed the principal food of numerous black fellows. I called this country the "Valley of Lagoons," or the "Country of the Lotophagians." After ascending the basaltic ridges, which surrounded the valley to the south, the west, and north-west, we found ourselves on a level

country, openly timbered with narrow-leaved iron-bark or box, the forest changing with fine plains, sometimes many miles long and several miles broad. Often a small brook was running in them. To a very conspicuous mountain on the basaltic table-land I gave the name of "Mount Lang." (Laing?)

A big creek sweeps along the east and north-east side of this plateau, and separates it from primitive formations. The frequency of big fantastic hills of the white ant, which I had not seen before of such a size, induced me to call it "Big Ant-hill Creek." At lat. $18^{\circ} 16' 37''$, running brooks came down along the plains of the table-land from Mount Lang and several other isolated hills, and joined Big Ant-hill Creek. On leaving the Burdekin I followed up this creek, passed in a north-north-west direction over a level country, and came, in lat. $18^{\circ} 22' 2''$, on waters which flowed to the east and north-east; they either belong to the Burdekin or to a more northerly system. I called the first creek I came to "Separation Creek," as it separated the basaltic from the primitive formations, as Big Ant-hill Creek had done; several other creeks joined it lower down. Fine flats extend along its banks. The whole table-land is beautifully grassed, of great extent, well provided with water along the creeks, the brooks, and the river, but in the dry season waterless in its centre. This country is peculiarly adapted for cattle and sheep stations, the elevation of it (at least 2000 to 2800 feet above the level of the sea) renders it cool and fit for sheep; the ground is sound, and the forest is very open. It is in the centre of the York Peninsula, equally distant from the east coast and from the Gulf of Carpentaria, to which, as I shall presently show, a system of rivers, well provided with water, forms an easy communication, with the exception of some mountainous passages, which later travellers will abandon for easier roads farther off the rivers.

It would be tedious to mention the numerous mountain-ranges along the Burdekin, to some of which I gave names, leaving many of them nameless.

About fourteen miles from Separation Creek, in a north-north-west direction, we came on gullies and creeks, which collected into a watercourse going to the westward. In latitude $17^{\circ} 58'$ we found a fine reedy water-hole, below which another bigger creek joined from the northward: the bed became very broad, in some places more than half a mile, with several channels, which, however, collected again in passing through mountain gorges. I called this river "The Lynd," in acknowledgment of the infinite kindness which the gentleman of that name has bestowed upon me. I followed it down from $17^{\circ} 58'$ to $16^{\circ} 30'$, where it joins a river coming from the east.

The Lynd works its way in a north-westerly course, through a

very mountainous country, from $17^{\circ} 58'$ to $17^{\circ} 9' 17''$. There is, however, plenty of grass and water to feed any number of cattle or horses which might be driven down to the gulf. Several big running creeks come in from the westward: they will probably allow a more immediate communication with the head of the gulf. From $17^{\circ} 9' 17''$ fine flats, well grassed, accompany the river; they are mostly timbered with box, apple-gum (a new species of gum, with the foliage of the apple-tree of Darling Downs, and with the black butt of the Moreton Bay ash), bloodwood, and occasionally stringy-bark. We passed several fine lagoons on the flats along its lower course. It had a running stream from latitude $17^{\circ} 25'$.

The rock of the Upper Lynd is primitive; granite, sienite, pegmatite, hornblende; lower down, talc-shiste, broken by porphyry, appears, and before the river enters the flats it is accompanied by sandstone ranges, which in some places form perpendicular walls on both sides of the broad sandy bed.

It is interesting to see how we descend from the table-land to the gulf from the same series of rock through which we had ascended from the east coast along the Burdekin, only in an inverted order.

Many new trees made their appearance on the ranges, as well as along the river and within its bed. I shall mention a gum-tree, with showy orange blossoms, very big seed-vessels, two inches long, one inch broad, with a short foliaceous bark, the upper branches remaining white and naked; we called it tea-tree gum, as the foliaceous nature of its bark reminded us of the tea-tree. This tree was not observed at the east side of the gulf, but re-appeared very extensively at the west side up to Port Essington, forming the forest round Victoria. Several other forest-trees, intermediate between the bloodwood and the gum-tree, were observed. None of these trees however, are of use to the settler or squatter, as the fibre of their wood is too interwoven to allow splitting; nor is their bark easily stripped. The iron-bark disappears where the Lynd enters into the flats, and it is wanting all round the gulf. At the neck of the Coburg Peninsula is a tree which resembles the iron-bark; but it is rare, and differs essentially from it. The stringy-bark, the bloodwood, and the box are the only forest-trees which accompanied us to the end of our journey, always re-appearing where the soil favoured their growth.

From latitude $16^{\circ} 30'$ to $15^{\circ} 51'$, we travelled along a fine river with a running stream, now narrow and shallow, now swelling into fine long sheets of water. I called it the "Mitchell," in honour of Sir Thomas Mitchell. A belt of open forest accompanies its banks; farther off, the country opens more and more, and changes into a series of plains extending parallel to the river;

they are limited by a forest of small acacia-trees, and several others which I have not yet been able to determine. Lagoons became larger and larger, and more frequent, as we travelled down the river; the country improved, the plains grew bigger, the forest land richer, receding farther from the river.

In a large water-hole of the Lynd we found a dead saw-fish (*pristis*); in those of the Mitchell, alligators were seen by my black fellows.

I expected that the Lynd, and afterwards the Mitchell, would turn to the westward, and join the sea in latitudes where the Van Diemen, the Staaten, the Nassau, were indicated; but the Mitchell passed the latitude of the Nassau, and I could now only expect to see it join the sea at the Waterplats, to which its general course inclined. I had followed these rivers more out of scientific and geographical interest than for the benefit of my expedition; for I was compelled to go back in order to head the gulf. If my provisions had been sufficient, I should have followed the Mitchell down to its mouth; but afraid that I should be short of provisions, I left the river, and went to the westward.

Plains, open forest land, lagoons full of fish, and covered with the broad leaves and showy blossoms of the *nymphaea*, gave a great variety to this fine country, well adapted for the breeding of cattle, and particularly horses, though deficient in good timber.

Here, at one of the lagoons, in latitude $15^{\circ} 55'$, not very far from a large creek, which I consider the upper part of the Nassau, Mr. Gilbert was killed by black fellows, who had sneaked upon us immediately after nightfall, just when the greater number of the party had retired to their couches. They wounded Mr. Roper and Mr. Calvert severely; but Mr. Gilbert was the only one who received a deadly wound, a spear entering into the chest between the neck and the clavicle, at the moment when he was stooping to get out of his tent. At the first discharge of our guns the black fellows ran away. The next morning they were wailing for one of their number, who, it seems, had been severely wounded. They left the country, and we did not see any more of them.

I passed the Staaten in latitude $16^{\circ} 27' 26''$; it is a river with a broad sandy bed, easily to be crossed at low tide; its water is briny. Between the Staaten and the Van Diemen, which I crossed at $17^{\circ} 0' 13''$, I passed four creeks, all provided with water-holes and fine water. Between the Staaten and Gilbert's Lagoon I found three creeks with water; the country along both rivers is excellent. Between the Van Diemen and the Caron, latitude $17^{\circ} 28' 11''$, I passed a small river which had no name, and which I called the "Gilbert," in commemoration of the fate of my unfortunate companion. Its latitude was about $17^{\circ} 5'$, it contained numerous water-holes of fresh water; but was not running. A fine

chain of lagoons is between the Van Diemen and the Gilbert; seven creeks with water between the Gilbert and the Caron. Towards the latter river, which had no water in its bed, but chains of lagoons parallel to its banks, the creeks were lined by a dense tea-tree scrub, half a mile or more broad. The tea-tree is of a peculiar species, which always indicates the neighbourhood of salt water. In latitude $17^{\circ} 49'$ we came on a salt-water river, which I called the "Yappar," this word being frequently used by friendly black fellows, whom we met at one of the fine lagoons alongside the river. Between the Yappar* and the Caron there is a chain of shallow lagoons of fresh-water.

The whole country from Gilbert's Lagoons to the Yappar, extending along the east coast of the Gulf of Carpentaria, is highly adapted for pastoral pursuits. Cattle and horses would thrive exceedingly well; sheep would not, neither the climate, the temperature, nor the nature of the soil being favourable for them. Large plains limited by narrow belts of open forest land, extensive box flats and tea-tree flats openly timbered, changing with a more undulating country, fine grassy meadows along frequent chains of lagoons, and shady forest land along the rivers, render this country pleasing to the eye of the traveller, and inviting to the squatter. After what I have learnt of the cultivation of rice and cotton, I can add, that long stretches of country would be adapted for both.

The country is well inhabited by black fellows; we had three times intercourse with them: the first time, they were hostile (when Gilbert was killed); the second time, they were very noisy, but withdrew at the approach of a horseman, and were not seen again; the third time, at the Yappar, they were very friendly, and it was evident they had seen either Malays or white men before.

I called the whole country between the Mitchell and the Van Diemen the "Nonda Country," from a fine shady tree with a yellow eatable fruit, which we enjoyed very much. It grew in the stretches of open forest land with the bloodwood and the pandanus. I had seen it first at the Upper Lynd. It disappeared at the Van Diemen and we never met it again.

Between the Yappar, longitude $140^{\circ} 45'$, approx., and the Nicholson, longitude $138^{\circ} 55'$, which latter river I crossed in latitude $17^{\circ} 57'$, I passed three big salt-water rivers, one fine running creek, which I called "Beames' Brook," and several chains of fresh-water lagoons. The country west of the Yappar is undulating and hilly forest land, frequently scrubby, for an extent of about twenty miles. Here it opens in immense plains, some of them three miles broad, ten miles long, and longer. The plains stretch along the banks of the rivers, and are separated by creeks

* The Yappar is the Flinders of Captain Stokes.

lined by thickets of a small tree which we called raspberry-jam tree from the scent of its wood. These creeks had fine water-holes, but they were all for the greater part dry. We found our water principally in grassy lagoons surrounded by polygonum; but the country is in general badly watered, though the number of black fellows, the smoke of whose fires we saw all around us in crossing the plains, showed that a nearer acquaintance with the country would probably lead to the discovery of a sufficient supply of water.

Beames' Brook, which I crossed in latitude $17^{\circ} 57'$, was about twenty yards broad where I first met it. A rich verdant brush of pandanus and the palm-tree, and several other trees, lined it. Its water was fresh, but affected by the tide. At the crossing-place (about eight miles lower down) it was three yards broad, very deep in some places, shallow in others, a full-flowing little stream, with magnificent oak trees and palms, and pandanus and flooded gum along its banks. We had never met nor did we meet another brook like it again.

About three miles farther we crossed the "Nicholson," called so in honour of Dr. William A. Nicholson, of Bristol, who had enabled me to come to Australia to explore it, and study the nature of the country. Its bed is 100 yards broad, sandy, with magnificent drooping-leaved trees, a shallow running stream, flood-marks 15 to 18 (feet?) high, a chain of fine lotus-lagoons parallel to its banks, which are accompanied by fine box-flats on its left.

The salt-water rivers which I had crossed, as well as those which I have still to mention, are very broad (150, 200, 300 yards); but in general were easily fordable, the fords being for the most part formed by rocky bars crossing the rivers. These fords were frequently indicated by fisheries of the natives, who place sticks in close rows, or throw up walls of loose stones to prevent the fish from returning with the tide. At the head of the salt water, the bed of these rivers usually enlarged, and was frequently divided into two or three deep channels, separated by high bergs; one of which channels either contained a running stream of fresh water, lined by pandanus and the drooping tea-tree, or had just ceased running, leaving only a chain of fine water-holes.

From the Nicholson to the Roper (lat. $14^{\circ} 50'$, long. $135^{\circ} 10'$) we travelled through a country in part miserably scrubby, in part covered by dense forests of tea-tree and stringy-bark, which were sometimes open, but generally scrubby, and rendered difficult for passage by a thick underwood. There was particularly a leguminous shrub, from two, three, to five feet high, with a winged stem, and branches, leafless, with yellow blossoms,

(like *Bossiaea scolopendrium*), which composed the scrub and the underwood of this country. Several species of shrubby acaciæ, and several grevilleas were very frequent. The vegetation preserves the same character all along the west side of the gulf, across the Arnheim Peninsula, and up to Port Essington, wherever the soil is similar. Along large rivers the country opened, and fine box-flats and open forest land refreshed the eye tired by the endless scrub. It is very probable that farther from the sea-coast, and higher up the rivers, fine land exists. The country is in general well watered, numerous creeks provided with good water-holes, and several rivers, with running streams at the head of the salt water, go in a north-easterly direction, which changes into an east-north-east and easterly one, to the sea.

Between the Nicholson and the Marlow, lat. 17° , named after Captain Marlow, of the Royal Engineers, for his kind contribution to our expedition, we met numerous creeks, which contained either fresh or slightly brackish water. The first, lat. $17^{\circ} 39'$, I called Moonlight Creek, as I had found it when reconnoitring during a moonlight night; another, about sixteen miles north 30° west, I called "Smith's Creek;" a third I met in lat. $17^{\circ} 25'$; a fourth, about eleven miles north-north-west. The whole country was covered with an almost uninterrupted tea-tree scrub.

Between the Marlow, long. $138^{\circ} 25'$, and the Van Alphen, lat. $16^{\circ} 30'$, long. $137^{\circ} 18'$, I passed six creeks containing a greater or smaller supply of fresh or brackish water; some of the isolated water-holes were very small, and often very brackish: seven creeks, ten to twenty yards broad, were salt, the water filling their whole bed; they were easily fordable, as the bed was composed of a firm sand or of rock. The three most southern ones probably join into a large river, the mangrove line of which I saw in the distance. I called the most southern one Turner's Creek, in acknowledgment of the liberal support I received from Cooper Turner, Esq. In lat. $16^{\circ} 52'$, about eighteen miles south-east of the Van Alphen, the country opens, and fine plains extend along a big creek, though badly supplied with water. In the bed of this creek I found a piece of granite, and near another, about eight miles west-north-west of this, a large piece of porphyry, in an old black fellow's camp. This piece had served to crush the seed-vessels of the pandanus, which grows abundantly all along these creeks. These pebbles show that the table-land, or the division of the waters, is not very distant, as I found the primitive rocks almost invariably connected with, at least, the ascent to a table-land.

Between the Van Alphen and the Abel Tasman, lat. $16^{\circ} 29'$, I passed a big creek, latitude $16^{\circ} 35'$, and a small river well

supplied with water, which I called "The Calvert," in commemoration of the good services of my trusty companion, Mr. James Calvert. Sandstone rock frequently cropped out in the open stringy-bark forest which covers the greater part of the intervening country. Sandstone ranges were seen to the west and north-west. The lower part of the Abel Tasman forms a broad sheet of salt water; the banks are steep, lined with mangrove and several trees peculiar to the change of fresh and salt water, as I feel convinced that during the rainy season the freshes go far out into the sea. The flats along the river are well grassed, openly timbered with bloodwood, stringy-bark, and white gum. In latitude $16^{\circ} 29'$ the water is fresh, running strong over a rocky bed; the stream is about three feet deep, fifteen to twenty yards broad; the whole bed from bank to bank 300 yards.

Between the Abel Tasman and the Seven Emu River, longitude $137^{\circ} 5'$, latitude $16^{\circ} 12'$, I crossed seven creeks containing pools of water, some of them brackish; four had a fine supply of it. The whole country is a succession of tea-tree and cypress-pine thickets and scrubs. A fine open well-grassed country extends along the Seven Emu River, which received its name from numerous flocks of emus, seven of which were hunted down as we travelled eight miles up its banks. We soon met the fresh-water stream, which we crossed at a black fellow's well and fishery.

Between the Seven Emu River and the Robinson, latitude $16^{\circ} 8'$, longitude $136^{\circ} 43'$, several small waterless creeks were met, after having passed the fine country near the river and some miserable scrub. A fine path of the natives led me to a large but waterless creek, the banks of which were covered with cypress-pine and cycas-groves (the cycas, a tree of the aspect of the palm, 30 to 50 feet high, and higher, frequently with two or three heads; the leaves like those of *Zamia spiralis* in the neighbourhood of Sydney, the nuts arranged in two parallel lines along an intermediate flat fleshy fruit stalk). The footpath went from cycas-grove to cycas-grove; big wells, 6 to 8 feet deep, were dug in a sandy soil, which rested on a layer of stiff clay. All these wells were, however, dry, though the whole country looked fresh and verdant. About five miles from this creek we came to a large salt-water river, equally accompanied by cycas-groves. A fine footpath brought us to a large well under the bank of the river. An alligator was tracked at this well, and porpoises were seen playing in the broad salt-water of the river. Two miles below the spot where we came to the river, it entered into a still bigger one coming from the westward; the first became narrow five miles higher up, where the salt water ceased and fresh-water pools commenced. I called this "Cycas Creek," and the more

northerly river "The Robinson," as a slight sign of gratitude towards J. P. Robinson, Esq., for his kind support of our expedition.

The fruit of the cycas forms the principal food of the natives during September. They cut it in slices of the size and thickness of a shilling, spread these slices on the ground and dry them, soak them for several days in water, and pack them, after this, closely up in sheets of tea-tree bark. Here it undergoes a process of fermentation—the deleterious properties of the fruit are destroyed, and a mealy substance with a musty flavour remains, which the black fellows very probably form into cakes, which they bake. The fruit of the pandanus forms another, apparently very much liked, eatable of the natives: we found heaps of it in their camps, and soaking in water contained in large koolimans made of stringy-bark. I am inclined to believe that they are able to obtain a fermented liquor, by soaking the seed-vessel of the pandanus, and by washing out the sweet mealy substance which is contained in the lower part of the seed-vessel between its fibres.

Between the Robinson and the Macarthur, latitude $16^{\circ} 5' 26''$, longitude $136^{\circ} 10'$, named after Messrs. James and William Macarthur, in acknowledgment of their kind support of my expedition, I crossed a fine creek with a chain of deep pools, and two waterless creeks. The whole country is a stringy-bark forest, mixed with melaleuca-gum, with cypress-pine thickets and tea-tree scrub. About five miles from the creek we had an interview with a tribe of black fellows, who gave evident signs that they knew the gun and the knife. They were very friendly, and we exchanged some presents with them. *They were circumcised, as were all the black fellows of the gulf we had seen!* The head of a crocodile was seen at Cycas Creek; the carcass of another I found at the upper crossing-place of the Robinson: tracks were observed by Charley at the water-holes of the creek, between the Robinson and the Macarthur.

The country along the Macarthur is well grassed, and openly timbered for a half to one and a half mile off the river. Sandstone ranges commence at lat. $16^{\circ} 5' 26''$. Two miles higher up it is fordable; a running stream of fresh water enters the broad salt-water river; its bed gets broad and sandy, with the vegetation of the Lynd, and fine plains extend along its banks to the westward.

Between the Macarthur and the Red Kangaroo River I passed three creeks well provided with water. The most southern is about ten miles north-west from the crossing-place of the Macarthur; the second, a pandanus creek, is only one and a half miles from the former, and joins it lower down; the third, about nine miles farther north-north-west, I called the Sterculia Creek,

as the *Sterculia heterophylla* grows very frequently along its lower course. The Red Kangaroo River, latitude $15^{\circ} 35'$, has a very broad sandy bed; two channels separated by a broad high berg; the northern channel has a fine supply of water in numerous water-holes, the connecting stream of which had just ceased running. A fine lagoon extends along its southern bank, about half a mile from the river. The country near the crossing-place of the Macarthur is intersected by rocky sandstone ranges. Towards the first creek, tea-tree forest and box-flats render the travelling easy. Sandstone ranges were seen to the left. From the second creek to Red Kangaroo River the country is a miserable scrubby stringy-bark forest.

From the Red Kangaroo River to Limmen-bight River, latitude $15^{\circ} 5'$, longitude $135^{\circ} 30'$, we passed through a continuous low dense scrub. In four creeks intersecting our course we found either fresh or brackish water. The sandstone range which I have just mentioned continued on our left. In this scrub, twenty-nine miles long, almost all the small trees had been thrown down by a violent wind; they lay from south-east to north-west. At Port Essington I learnt from Captain Macarthur that a hurricane had passed over Victoria in 1838, and I saw the trees which it had uprooted; they lay in the same direction as those of Limmen-bight, and I feel assured that the same hurricane had passed over the west coast of the Gulf of Carpentaria.

In latitude $15^{\circ} 14'$ I came to the sea-coast. I went in a north-west course to the northern extremity of the sandstone range indicated in the map of Arrowsmith. We saw the sea, an island (Maria?), and a large river coming from the westward; white sand plains were seen along its course.

I had to find my way through an intricate country intersected by salt-water creeks. Fresh water was generally found in creeks coming from sandstone ranges; their heads were frequently formed by fern-swamps (a species of *blechnum* was very frequent). From latitude $15^{\circ} 31'$ I crossed the salt-water river by a rocky bar.

Ten miles farther to the north-west I met a second branch of the same river, with a fine broad bed, and several channels of fresh water in detached pools, which had just ceased running, lined with pandanus and drooping tea-trees. Both branches are of equal size, and probably came from an equal distance. Captain Wickham has explored the lower part of the river, and probably one of its branches. I do not know whether Captain Wickham has given a name to these rivers. I called the lower the Limmen-bight River, and its northern branch "The Wickham," in honour of the successful explorer of this coast, and of the north-west coast of Australia.

Between the Wickham and the Roper, latitude $14^{\circ} 50'$, longi-

tude $135^{\circ} 10'$, the country is badly watered. Though we passed nine creeks, two of which were very considerable, we found water only in the pools of two, after having followed them down for a considerable distance. The country is very remarkable, particularly after leaving the Wickham. Steep sandstone ranges parallel to each other, with a direction from south-west to north-east, intersected our course; they were separated by tea-tree flats; but at their foot generally a richer vegetation of pandanus, of the leguminous iron-bark, and of bloodwood existed, which made me mistake them for the verdant belt of trees accompanying rivers and big creeks. From the top of these ranges other ranges still appeared, rising in succession, till their dim outlines were lost in the misty blue of the horizon. My horses and cattle got very footsore, and I was compelled to go to the northward in order to get out of those ranges.

After having passed over tea-tree flats, I entered again into a scrubby stringy-bark forest with patches of cypress-pine thickets; the creek with water was in lat. $15^{\circ} 10'$. Towards the Roper sandstone ranges re-appeared; fine box-tree flats, with a dry water-course, stretch from south by west to north by east, but they are limited towards the river by a narrow belt of thick scrub. Plains with groves or thickets of the raspberry-jam tree, and overgrown with salicornia, indicate the neighbourhood of salt water. A fine open country, undulating or hilly, extends along the Roper, and fine lagoons, some two or three miles long, covered with ducks and wild geese, are parallel to the river, a quarter to two miles off.

I followed the Roper from lat. $14^{\circ} 50'$ to $14^{\circ} 40'$, long. $134^{\circ} 18'$; but I came again on its upper course, and I believe that the creeks which I passed from lat. $14^{\circ} 40'$ to $13^{\circ} 44'$ long. $133^{\circ} 45'$ belonged to the system of that river, and I equally believe that the corresponding waters to the north-west belong to the system of the South Alligator, on the main branch (?) of which river I came much later in descending from the table-land into the valleys to the westward. I observed the tide as far as lat. $14^{\circ} 44'$, where the bed of the river assumes the character of the Lynd and of many rivers I have mentioned before. As far as the tide extends the river is from 150 to 200 yards broad, deep, with steep banks lined with dense hedges of pandanus, of the drooping tea-tree, and several other brush-trees, amongst others a jasmin, which was in blossom, and rendered the air fragrant with the perfume of its flowers. Vines hung from tree to tree; and a fine leguminous climber (*kennydia*?), with green flowers, big pods, big brown seeds, grew in great abundance. These seeds, crushed and boiled, formed a tolerably satisfying food: it appeared that the black fellows did crush it on stones, which were in all the camps

along the river. This strip of brush was, however, very narrow, and cannot be compared with the river brushes of Moreton Bay, which I have not met to an equal extent during my whole expedition. A big creek came in from the southward, in lat. $14^{\circ} 48'$, and a branch as big as the main branch came from the northward.

The country along the river is openly timbered, and its upper part particularly, which opens into fine plains, would be well adapted for pastoral purposes. There are, however, many rocky ranges, bluff isolated hills and mountains, which frequently approach the river, and render the travelling along its banks difficult. The rock which composes these ranges is a fritted sandstone and indurated clay, regularly and horizontally stratified. In latitude $14^{\circ} 39'$ the plains commence; the river splits into a great number of channels, almost all with a running streamlet, every one lined with pandanus and tea-tree. I suppose that the main branch turns off to the south-west and west-south-west, as even the branch which I followed turns considerably to the south-west.

The banks of the river are inhabited by numerous black fellows. We had friendly intercourse with them at its lower part. At the Plains, Charley and Brown, my black fellows, asserted to have seen four of them coming up to our camp at nightfall, in order to attack us; they ran away, however, when they saw that we were prepared to receive them, even without the discharge of a gun.

After leaving this branch of the Roper, whose source, in latitude $14^{\circ} 40'$, longitude $134^{\circ} 16'$, is a living spring coming out of a gentle rise beyond the plains, I took a north-west direction through a country in which ridges, flats, and sandstone ranges frequently changed. In lat. $14^{\circ} 33'$ I came to a big creek with a good water-hole; in $14^{\circ} 24'$ basalt first made its appearance at the foot of sandstone ranges. A creek which I met here was waterless; but in one of the gullies which go down to it, a small rocky basin of water, fed by a spring, was found. Both creeks go down to the south-east, and join the Roper. Having passed these ranges, I came to a large fine valley, the south-east and east sides of which were limited by basaltic ridges. A watercourse turning to the south-west brought me to a fine running brook lined with groves of pandanus. The basaltic ridges made me believe that I was at the head of westerly waters; but the pandanus brook turned to the southward, and as I met in lat. $14^{\circ} 16'$ a large creek with a sandy bed, about ten yards broad, filled by a rapid stream running to the southward, which is joined by the pandanus brook, I felt assured that I was again at the Roper, the main branch of which had probably made a large sweep, at first to the westward, and afterwards to the northward. I followed the big

creek up its course to lat. $14^{\circ} 2'$. The country is in part very fine, but it becomes more and more mountainous, and the flats along its banks become more and more limited.

Leaving the creek, and ascending the sandstone ranges, I came to a table-land, level, with sandy soil, cypress-pine and stringy-bark forest, frequently scrubby. Watercourses and gullies went down to the south-east and south-west; both were collected by large creeks joining the Roper.

I met one of these creeks running to the south-east, with grassy lawns along its banks, in lat. $13^{\circ} 57'$. Another with the direction to the south-west, in lat. $13^{\circ} 50'$. My course changed between north-west and north-north-west. In lat. $13^{\circ} 41'$ approx., I came on the heads of the first westerly water, and found the first water-hole in its bed in lat. $13^{\circ} 38'$, long. $133^{\circ} 20'$.

Open well-grassed stony ridges accompany this creek, which I followed for several days. But as it turned too far to the south-west, I left it again, following my old course to the north-west, after having crossed a very rocky creek well provided with water, and came again to a table-land of the same description as the former, but sandstone rock cropped out more frequently, and formed into rocky ranges cut by deep gullies. From one of these ranges I had a view over the country before me, and I almost despaired of ever getting through it;—sandstone ridges behind sandstone ridges, lifting their white rocky crests over the forest; deep gullies, with perpendicular walls; rocky creeks, with boulders loosely heaped in their beds, frequently interrupted by precipices over which the waters must form magnificent water-falls during the rainy season.

I worked my way down to one of these creeks, and followed it along its bed, until a precipice between two mountain walls compelled me to leave it; following a grassy lawn up to the northward, I came to a watershed, and into another grassy lawn with a small creek, longitude $133^{\circ} 6'$, which brought me to the deep valley of a river coming from the east and going to the westward. It was difficult to get down the steep slopes; but once down, we found a fine provision of water in big holes, the water running through the loose pebbles which fill the bed.

Having crossed the river, and following a northerly or north-north-westerly course, I passed again over the table-land, from which numerous creeks, one, two, and three miles distant from each other, went down to the westward. They generally take their origin from rocky ridges rising out of the level land; frequently tea-tree swamps are at the head of these creeks; they soon become very rocky on both sides for a half, two, and three miles, and open again in fine grassy flats, well provided with water, which is found in deep puddle-holes of the creeks. Still

farther down they become rocky again; deep gullies join them from both sides; higher or lower precipices interrupt their course; and at last, arrived at the border of the table-land, a fine broad valley is seen deep below them, and their waters rush over a perpendicular wall of 500 to 800 feet high, down into a rocky basin, and into the channel, in which they flow to the westward to join the main branch of the South Alligator River.

The table-land is covered by forests of stringy-bark, of mela-leuca-gum, and banksia. Several grassy flats with a white gum (similar to the flooded gum) were observed. The drooping tea-tree grows in the swamps I mentioned, to a great size: the grass is excellent in some of these swamps; but a sedge prevails, which it appeared to me was not so much liked by our cattle and horses, as the deep green colour of the young plant after late burnings made me at first believe it would be.

It was very difficult to find a passage down the table-land; I succeeded, though the descent was very steep, even for our horses and pack-bullocks. This descent was about lat. $13^{\circ} 22'$, long. $132^{\circ} 50'$.

I dare say that my passage over the table-land would have been much simplified by following the main branch of the Roper to its head, passing over to Snowdrop's Creek, and following it down, notwithstanding its southing; for Snowdrop's Creek, in all probability, joins the Flying Fox River, which I consider the main head of the South Alligator. This route would be practicable for cattle and horses, which might be driven over to the west side; I could certainly not recommend my line of march. It is very remarkable that pegmatite cropped out at the foot of the slope where we made our descent, whilst at the top, as well as all over the table-land, when we met the rock, it was found to be fritted sandstone.

The South Alligator River is joined by a great number of creeks, which, as far as we could see, came down over a precipice, and must of course form as many waterfalls during the rainy season.

I followed the river to lat. $12^{\circ} 51'$. At the upper part of the valley the river passes between a high range and an isolated peak; at the foot of the former I observed pegmatite again. Farther down, big lagoons, with an outlet into the river, are very frequent. Farther off the river, iron-sandstone ridges, covered with a scrubby forest, in which a small fan-leaved palm-tree becomes more and more frequent, extend between small creeks, which go down the river.

The lagoons were surrounded by magnificent tea-trees, and this outlet was lined by pandanus; myriads of ducks and wild geese covered the water; the whole country had been burnt, and the late thunder-showers had produced the most luxuriant grass.

We experienced the first thunder-shower on the 14th of November, at the table-land, after having been without rain from March, 1845, with the exception of a shower in June and a drizzling rain on the 1st of September.

In lat. $12^{\circ} 51'$ large plains accompanied the river, either grassy with a rich loose black soil, or entirely bare with a stiff clayey soil. On plains of the latter kind we first met a salt-water creek lined with mangroves. The river bank was covered with a thick vine-brush, gigantic tea-trees, palms, and bamboo.

In lat. $12^{\circ} 49'$ I came to a river, apparently with fresh water, lined with pandanus, palm-trees, &c., which joined the South Alligator. I was compelled to go up its course, in order to head it. After about three miles' travelling, we found that it was the outlet of a remarkable swamp, which, according to the statement of friendly black fellows, extended far to the eastward. The swamp was, with few exceptions, dry; its bed a stiff clay, cracked by the heat of the sun; out of its bed small islands of pandanus and of tea-tree rose, either round like a tuft of green grass, or long and irregular. Fortunately we were able to cross it. The black fellows gave us to understand that a big lake of water is at its head. In the rainy season a passage would be impossible, and the traveller would have to keep out far to the north-east from the upper part of the South Alligator, or on the table-land, not only to avoid this big water, but also to avoid being caught by the East Alligator, which, as I shall mention, compelled me to go far to the south again in order to cross it.

I passed, in a northerly course, over ironstone ridges covered with rather scrubby forest, in which the small fan-leaved palm-tree became so abundant as almost to form a forest of itself. A small tree, which we called the gooseberry-tree, as the taste of its ripe fruit resembled that of the gooseberry, was very frequent; we had found it all along the outside of the gulf. We crossed numerous creeks—the rest to the south-east probably joined the swamp; the others to the westward. We met with water in lat. $12^{\circ} 38'$, $12^{\circ} 26' 41''$, $12^{\circ} 21' 49''$. Here I found granite again, which cropped out in the bed of a fine creek, with an abundant supply of water. At about $12^{\circ} 17'$ I crossed a running brook, bubbling and murmuring like the mountain brooks of Europe. It was probably the outlet of a tea-tree swamp; its bed was rocky. A fine path of the natives passed along its banks.

My northerly course brought me to an immense plain, 6 or 7 miles broad, and endless to the eye to the westward and eastward. That part which was nearest to the forest land (which ended everywhere in pandanus-groves and tea-tree hollows) was composed of black soil and richly grassed. Nearer to the salt-water creeks, which we met, and which compelled us to return to the

forest, the soil was a stiff clay, covered with a rigid dry grass. The salt-water creeks were lined with mangroves. We found water in a swamp along the forest; it was covered with geese and ducks. About four miles farther to the east-north-east, friendly black fellows showed us a number of deep wells (6 or 7 feet deep), which were dug through the sand to a layer of clay, on which the water collected. These wells were observed all along those big plains which we passed or crossed afterwards. It appears that the black fellows dig them, either because open water is wanting, or because the water in swamps and lagoons is very bad, or because they want water in the immediate neighbourhood of those places where they find abundant food during a certain season. I believe that the last is generally the case, though the two others may occasionally compel them to procure water by digging.

At lat. $12^{\circ} 8'$, long. $132^{\circ} 40'$, I came on the East Alligator, and I found myself compelled to go to the southward, as far as lat. $12^{\circ} 23'$, in a south-south-easterly course, to cross the river. Large plains accompany it all along its left bank; ridges and forest-land lie beyond the plains, and along the outskirts of the forest-land the wells of the natives are found. On the right we observed conical and strangely shaped hills, either isolated or connected in short ranges; and when we came to the higher part of the river, rocky sandstone ranges, rising abruptly out of the level of the plain, appeared to surround the valley of the river. At the foot of these rocky ranges fine lagoons were found, which were so crowded with wild geese, that Brown, one of my black fellows, shot six at one shot. The plains were full of melon-holes, and dead fresh-water shells, *limnæus* and *paludina*, covered the ground.

The valley of the Upper East Alligator, which I rather should call Goose River (for nowhere did we observe so many geese—and what is called alligator is no alligator, but a crocodile), is one of the most romantic spots I have seen in my wanderings;—a broad valley, level, with the most luxuriant verdure; abrupt hills and ranges rising everywhere along its east and west sides, and closing it apparently at its southern extremity; lagoons, forming fine sheets of water, scattered over it; a creek, though with salt water, winding through it.

After having crossed the river, I went to the northward; passed a plain about eight miles long, from which I saw bluff mountain heads to the north-east, which seemed to indicate the valley of a northerly river; entered the forest-land; passed several creeks running to the eastward (one at $12^{\circ} 11'$, with water); and followed a well-trodden footpath of the natives, which led me through rocky sandstone ridges, over numerous creeks running to the westward to the broad sandy bed of a river, with fine pools of

water, which I consider to be the fresh-water branch of the East Alligator, coming from the east. Not very far from the river, we came to a fine lagoon, beyond which a large plain extended; the lat. of this lagoon (Bilge's Lagoon) was $12^{\circ} 6'$.

I passed the plain, and entered the forest-land. Just where the latter commenced, on a swampy ground between sandstone rocks, the first tracks of buffaloes were observed.

The forest covers an undulating country, in which the ironstone frequently crops out. A fine chain of lagoons and a tea-tree swamp, changing into a pandanus creek, were well supplied with water. Both went to the eastward. At the latter, buffalo tracks were seen again. (Lat. $11^{\circ} 56'$.)

We travelled in a northerly course again, through forest-land, and crossed a small plain, in which a mangrove creek turned to the westward, and farther on a tea-tree swamp, also to the west. On a fine plain we met a tribe of black fellows (Nywall's tribe), who guided us to a good-sized lagoon. This plain extended far to the northward and westward; two isolated peaks and two long ranges were seen from it to the east and south-east. We crossed and skirted these plains in a north-north-west course, and entered the forest-land, which was undulating, with low ironstone ridges, from which numerous creeks went down to Van Diemen's Gulf, along which we travelled. Black fellows had guided us for two days, but they left us at the neck of the Coburg Peninsula, which we entered by a fine footpath. Keeping a little too much to the northward on the narrow neck, we came to westerly waters, and to Mountnorris Bay. I turned, however, again to the westward, to come to westerly waters. Creeks are numerous on both sides, and fresh water was frequent after the late thunder-showers. I made my latitude at $11^{\circ} 32'$ on a westerly water, and at $11^{\circ} 26'$ on an easterly water (Baki-Baki's Creek). Keeping a little too much to the northward from the latter creek, I came to Raffles Bay, from which black fellows familiar with the settlement guided us round Port Essington to Victoria, which I entered at about five o'clock on the 17th of December, 1845.

Ridges composed of the clayey ironstone (a ferruginous psamnite), which I had found so extensively in travelling round the gulf, form the watershed in the neck of the Coburg Peninsula, and become more numerous and higher within the Peninsula itself. Between Mountnorris Bay and Raffles Bay, I passed several high ridges, and a fine running creek, about 15 miles from the head of the harbour. The ridges are rather densely wooded. The stringy-bark, the melaleuca gum, the leguminous iron-bark, are the prevailing timber. Along the creeks and in the swamps the tea-tree grows to a stately size, and yields an excellent timber. The stringy-bark is useful for its bark and its

wood. The cypress-pine is abundant on the neck of the Peninsula. The cabbage-palm, with long pinnatifid leaves, grows along some of the creeks, and even on the ridges, and forms groves, and almost a forest at Montjealk, between Raffles Bay and the harbour. The small fan-leaved palm is very abundant; the little gooseberry-tree becomes a low shrub.

The tracks of buffaloes became more and more numerous as we advanced on the neck of the Peninsula. They formed at last a regular broad path along the sea-coast, sometimes skirting the mangrove swamps, in which all the western and eastern creeks end, sometimes entering into the swamp itself. Farther on, other paths turned off into the forest or along creeks, and formed a mesh-work which rendered it impossible for me to keep to the black fellows' principal footpath, leading from Nywall's Lagoon to the settlement. We frequently saw buffaloes as we went on, and they were very numerous at Baki-Baki's Creek, which joins Mountnorris Bay. In riding along it I saw three and four at a time hurrying out of the deep holes of water within the creek, to which they come in the heat of the day to cool themselves. About seven miles from Nywall's Lagoon we succeeded in shooting a fine beast of about three years old, which fortunate accident enabled me to bring my last pack-bullock to the settlement. The buffaloes are equally abundant between Raffles Bay and the harbour, and the whole country, particularly round Baki-Baki's Bay, and on the neck, is as closely covered with buffalo-tracks as a well-stocked cattle-run of New South Wales could be.

I entered Victoria with one pack-bullock and eight horses. We had killed fifteen of our bullocks, and dried their meat. Along the east coast, and at the east side of the gulf, they kept in very good condition, and yielded a fine supply of fat meat; but at the west side, long stages, bad grass, and several waterless camps, rendered them very weak, and compelled me to kill them; the heaviest bullock of the lot scarcely yielding a fortnight's supply of meat. My horses did exceedingly well; they got footsore several times in passing a very rocky country, but they soon recovered on soft flats. At the Burdekin, one broke its thigh-bone; we killed it, and dried its meat: at the Lynd, another died suddenly, probably of the gripes; at the Roper, four, the finest of the whole lot, were drowned, the banks being very steep and boggy, and the river very deep. The loss of these was very heavy. I had to throw away the greatest part of my botanical and geological collections; and my plans of returning overland, cutting off the angles of my route, and keeping more to the westward, were frustrated.

When our flour, our tea, our salt, our sugar, were gone, we lived on dried beef and water, and we lived well on it as long as the beef was good; but at the latter part of the journey the beef

got bad, as it was very poor and of knocked-up beasts, and as the moist sea-breeze made it very liable to taint. Fortunately the game became abundant round the gulf, and we caught, for instance, in August fifteen, and in September sixteen emus, every one of which provided meat for a day.

At the head of the South Alligator, black fellows came up to us, and we exchanged presents with them; they gave me the red ochre, which they seemed to consider as the best of their run. At the commencement of the plain a large tribe of black fellows came to our camp; and when we asked one of them where he got his tomahawk and a piece of shawl from, he pointed to the north-west. They knew Pitche Nelumbo (Van Diemen's Gulf). At the big Pandanus Swamp another tribe of black fellows guided us over the swamp, and behaved very kindly. They used the words *peri good* (very good), no good *Mankiterra* (Malays). At the mouth of the East Alligator, Eooanberry's and Minorelli's tribes were equally hospitable and kind. We met another tribe in travelling up the river, and at its head. The latter were, however, noisy, boisterous, and inclined to theft. At the north bank of the river we met Bilge's tribe, Bilge being the most important personage amongst them. At Nywall's Lagoon, Nywall treated us with *imberbi* (the root of a species of *convolvulus*), and two black fellows guided us two days farther. At Mountnorris Bay we met Baki-Baki; and, at Raffles Bay, Bill White's tribe, and Bill White himself guided us into the settlement.

At Eooanberry's tribe we first heard the question, "What's your name?" and the name for white men, "*Balanda*." At Nywall's tribe they asked for flour, bread, rice, tobacco; and one of them had even a pipe. It is difficult to express our joy when English words were heard again, and when every sign which the black fellows made, proved that we were near the end of our journey, particularly as December advanced, and the setting in of the rainy season was to be expected every moment.

I think that the most important results of my expedition are the discovery of the Mackenzie, the Isaacks, the Downs of Peak Range, and the Suttor; that of a communication between the east coast of Australia and the east coast of the Gulf of Carpentaria, along a river with running water, through a fine country; that of the Nonda Country, and of the big plains at the east side and at the head of the Gulf; that of a communication between Limmen-bight and the South Alligator River, along running streams and creeks. The future will show how far the country along the big rivers between the head of the Gulf and the Limmen-bight is available.

XI.—*On the Aboriginal Tribes of the Northern Coast of Australia.* BY G. WINDSOR EARL.

THE manners and customs of the native inhabitants of a newly-explored country present an interesting subject of inquiry; and by placing on record, at the earliest period of our acquaintance with them, the distinctive features of the different tribes of which they are composed, many peculiarities, interesting to the researches of the geographer and the ethnologist, may be preserved, which the progress of civilization, and the consequent increase of intercourse between them, would tend to obliterate.

Several of our earlier travellers in Australia appear to have felt the importance of this subject, and have paid due attention to it. With the tribes, however, of the northern coast, of whom I propose to speak, we have, till lately, been less familiar than with others; and these possess a peculiar interest, from the circumstance of the country they inhabit being in the close vicinity of the islands of the Indian Archipelago. These islands, again—that is to say, the groups more immediately adjacent to Port Essington—are occupied by a portion of the human family concerning which very little was known previous to the occupation of Port Essington, when the measures that became necessary for establishing the security of commercial relations in that quarter, brought us into communication with tribes with which we had previously been unacquainted. At Port Essington, indeed, we were completely surrounded by singular and interesting communities. A circle drawn around the settlement at a distance of 500 miles would enclose an almost equal number of distinct tribes, varying in complexion from the sooty black of the negro to the freckled yellow of the Polynesian mountaineer, and differing in social condition as much as in personal appearance.

The superior organization that exists in a colonial establishment composed entirely of individuals in the employ of Government, is highly favourable to the maintenance of friendly relations with the aboriginal tribes; and it is probably owing to this circumstance that our occupation of the Coburg Peninsula has been unattended with those collisions which so often occur when civilized men are brought into close communication with savages. Among the advantages attending this state of affairs may be counted that of our having become familiarly acquainted, not only with the tribes in the immediate neighbourhood, but also with individuals from distant parts, who had been induced, by curiosity, to visit the strange people that had fixed their abode upon the coast. Parties of warriors, headed by their chiefs, occasionally came from the remote interior to pay us a flying visit, and nearly every Macassar prahū that arrived from the Gulf of Car-

pentaria brought two or three individuals from one or other of the tribes that are distributed along the intermediate coast. Indeed, about the month of April, when the *prahūs* congregate at Port Essington, the population of the settlement became of a very motley character, for then Australians of perhaps a dozen different tribes might be seen mixed up with natives of Celebes and Sumbawa, *Badjūs* of the coast of Borneo, Timorians, and Javanese, with an occasional sprinkling of New Guinea negroes; and very singular groups they formed, busied, as they generally were, amid fires and smoke, curing and packing the trepang, or sea-slug, which they had collected from the shoals of the harbour.

I propose here giving a general sketch of the tribes inhabiting the Australian coast, from the Coburg Peninsula towards the east, confining myself chiefly to points more immediately connected with geographical science—namely, the distribution of the various tribes, the points upon which they may happen to differ from other Australian tribes with which we are already acquainted, and the social peculiarities that may afford traces of a connection with other races.

In the first place I should state, that certain general characteristics are observable among all the tribes of this part of the continent with which we became acquainted. Their skins are invariably embossed with raised cicatrices. The septum of the nose is generally pierced, that is to say among the men, for the custom does not appear to extend to the other sex. Clothing is disregarded, except by way of ornament, and in lieu of this they display a great tendency to adorn their persons with streaks of white, red, or yellow pigment. These customs, indeed, appear to pervade not only all the Australian tribes, but also the negro communities of New Guinea, and of those islands of the Indian Archipelago in which remnants of this race still exist. But these northern Australians, at least the tribes with which we are most familiar, have certain customs which are not general among the aborigines of this continent. For instance, their mode of burying the dead is singular. The body is deposited in a sort of cradle, formed by a number of poles, arranged within the crutches of two forked posts stuck upright in the ground. It is enveloped in many folds of the paper-like bark of the tea-tree, and is left there until the skeleton only remains, which is then deposited either in a general receptacle for the relics of the dead, or, if death should have occurred at so great a distance from this spot as to render removal inconvenient, it is placed upright within the hollow trunk of a decayed tree. We also discovered a distinction of caste, or, rather, the remains of such a distinction, for the natives themselves appear to have forgotten its origin and purport. These castes are three in number, and are termed respectively "Manjar-

ojalli," "Manjar-wūli," and "Mambulgit." The former is supposed to have sprung from fire, the term "ojalli" having this signification. The "Manjar-wūli," as the term implies, had their origin in the land. The signification of the term "Mambulgit" is exceedingly obscure. The natives themselves state that it implies "makers of nets." The *Manjar-ujalli* is certainly the superior caste, for, among those tribes in which chieftainship exists, the principal families are invariably of this caste, and are in the habit of alluding to the circumstance with considerable pride. With regard to the two remaining castes, I never could discover exactly which was the superior; indeed, the statements of the natives themselves were so contradictory upon this point, that it never has been, and probably never will be, cleared up. This point is interesting, from the circumstance of a very similar distinction of caste being found to exist among the Polynesian tribes of the neighbouring islands, who also adopt a similar mode of disposing of their dead. The natives of the Coburg Peninsula have also certain superstitions respecting the "waringin" or banyan-tree, which are common to the Indian islanders. Beyond this, their superstitions appear to resemble those which pervade the greater portion of the Australian tribes—a belief in the existence of evil spirits, of *kurlocks* or demons, and of ghosts; against the whole of which, fire affords protection. The spirits of the dead are also recognised in the strangers, whether European or Indian, who visit their country.

Although, as I have before stated, these northern Australians possess many of the general characteristics of the tribes of the south, still some striking peculiarities were found to exist, which contributed to excite a considerable degree of curiosity and attention, more especially as they also served to distinguish one tribe from another, even in some cases where their territories were immediately adjacent. During our earlier intercourse, when from inability to converse with the natives we could learn little respecting them beyond what absolutely met our eyes, we supposed that these peculiarities were merely accidental; but, subsequently, when our means of acquiring information became extended, and bodies of individuals from remote tribes occasionally resided among us, we perceived that many natives, who had attracted notice from being somewhat different in personal appearance from the people among whom they resided, were, in reality, mere visitors from distant tribes.

Before entering into any particulars with regard to the characteristics of the various tribes, it will be necessary to notice their geographical distribution. The Coburg Peninsula itself is occupied by four distinct communities. Three of these inhabit the northern and central parts of the peninsula, while the fourth,

which is the most numerous and powerful, occupies the entire southern coast and the islands of Van Diemen's Gulf; the upper portion of the harbour of Port Essington being also in their possession. This last appears to have only recently acquired territory upon the peninsula; indeed it would seem that at no very distant period, the pressure of a powerful people in the interior of the continent had driven one tribe in upon another, until several distinct communities have been crowded up within the Coburg Peninsula, where, until very recently, they have been making war upon each other to such an extent, that two of these have, within the memory of natives now living, been reduced from numerous bodies to mere scattered remnants.

These four tribes are distinguished among each other by the term which in the particular dialect of each designates the monosyllable "No." Thus the tribe which inhabits Croker Island and the country about Raffles Bay (and which appears to have originally consisted of two tribes, which have amalgamated to such an extent that characteristic distinctions are almost entirely lost) is termed "Yaako;" the Port Essington tribe goes by the name of "Yarlo," the western tribe by that of "Iyi," and the great southern tribe by that of "Oitbi." Another powerful tribe, which occupies the coast for some distance to the eastward of the peninsula, is called, from the country it inhabits, "Jalakuru." The Monobar tribe resides upon the eastern shores of Van Diemen's Gulf, extending to the south until it comes in contact with the Bimbirik tribe, which occupies the lower parts of the Alligator Rivers. These are all comparatively large communities, but the mountain range beyond is in possession of a people which appears to be more numerous than all the others put together, and which goes by the general name of "Marigianbirik," or people of the mountains. This tribe occupies a great extent of the uplands. Of those beyond we know nothing; nor have we any accurate details respecting the distribution of the tribes which extend from Jalakuru towards the Gulf of Carpentaria. The individuals belonging to them that visited the settlement from time to time, were in the habit of resorting to the ports frequented by the Macassar trepang fishers, for purposes of barter, but the latter were unable to inform us whether they resided constantly upon the coast, or came from the interior. It was only with regard to one singular race, which I shall have occasion to mention presently, a people residing upon the N.W. horn of the Gulf of Carpentaria, that we obtained any correct details upon this point.

With the *Yaako*, or Croker Island tribe, our acquaintance is of older date than with the others, from the circumstance of the Raffles Bay settlement, which was established in 1827, having been situated within their territory. The people of this tribe are generally

small in stature, ill-formed, and their countenances are forbidding and disagreeable. The hair is generally coarse and bushy. The beards and whiskers of the men are thick and curly, while the entire body is often covered with short crisp hair, which about the breast and shoulders is sometimes so thick as to conceal the skin. The eyes are small, and what should be the white has a dull muddy appearance. Their aspect, altogether, is more forbidding than that of the Australian aborigines generally. Nor are their dispositions of the most amiable description. They did not amalgamate with us so readily as the others, but this probably was in a great degree owing to the influence of the chiefs, who evidently regarded us with considerable jealousy, as being likely to supersede the influence they possessed among their people. The occasional visits of their chiefs to the settlement were invariably attended by a series of petty thefts, undertaken not by the chiefs themselves, but at their instigation. Mimaloo, one of their principal chiefs, who was known at Raffles Bay by the name of "One-eye," was particularly obnoxious in this respect, and latterly he was forbidden to enter the settlement. This man was one of the most perfect savages I ever remember to have met. His gestures, when offended, were frantic in the extreme, and resembled those of a wild beast rather than of a human being. His henchman and bosom friend, Loka, was characterized by a gloomy ferocity, even more distasteful than the fitful fury of his savage chief. This man was lately entrapped and killed by the Macassars, at a port on the north coast, for having, during the previous year, treacherously murdered one of their number, by throwing a spear at him when his back was turned. As far as we ourselves were concerned, this tribe proved to be harmless; but this was evidently the result of fear rather than of affection. I here allude more particularly to the chiefs; for the people, when left to themselves, conducted themselves well, and treated the parties from the settlement that occasionally visited Croker Island with a considerable degree of hospitality. The *Yarlo* and *Iyi* tribes, our more immediate neighbours, resemble each other very closely in general characteristics, although their dialects are totally dissimilar. They are a taller and better formed people than the Croker Island natives, and from the very commencement of our residence among them they evinced great partiality towards us, which ripened into what I believe to be a firm attachment. Being broken tribes, without chiefs, but divided into a number of families, they probably looked upon us as being likely to afford them some protection from their more formidable neighbours, who had shown a great inclination to encroach upon their little territory.

The Oitbi, or, as it was more generally termed by us, the Bijnalumbo tribe, which occupies the southern part of the peninsula,

becomes of interest, from the circumstance of many individuals belonging to it possessing a superior physical organisation to the people already mentioned. Arched eyebrows, straight silky hair, and complexions fairer than those of the Australian aborigines generally, were by no means uncommon, and many individuals possessed, in a considerable degree, that obliquity in the position of the eyes, which is considered as being characteristic of some of the Polynesian tribes. These appearances were even more developed in the people from the mountain range who occasionally visited us. Upon the whole, I am very much inclined to suppose that there has been some infusion of the Polynesian blood among the aborigines of this part of the continent. With regard to this point, however, it will be necessary to enter into some further details, which I propose deferring until I have disposed of the tribes on the Coburg Peninsula.

Of the four dialects spoken by the tribes of the peninsula, one only appears to differ in its general construction from those spoken in other parts of the continent, and this difference consists only in the words almost invariably ending in a vowel. I think this peculiarity is accidental, for it occurs in the *Iyi* tribe, which in every other respect closely resembles the Yarloo, or Port Essington tribe. The consonants *s* and *f* are rejected throughout the dialects of the peninsula, and this is also the case with the *h* aspirate. With the single exception mentioned above, two-thirds at least of the words end in a consonant, and often in double consonants, as "alk," "irt," &c. The nasal "ng" is very common. In addressing a person at a distance, the words are made to run into one another, so that a sentence is spoken as if it formed only one word of many syllables. In the Croker Island dialect, a "cluck" occasionally occurs in the middle of a word, which is effected by striking the tongue against the roof of the mouth.

A very considerable portion of the *coast* natives have, from frequent intercourse with the Macassar trepang fishers, acquired considerable proficiency in their language, which is a dialect of the Polynesian. They never, indeed, speak it correctly, from their inability to pronounce the letter *s*, which occurs rather frequently in the Macassar language. Thus *berasa* becomes "bereja," *trusaan* "turulan," *salat* "jala," &c. They, however, contrive to make themselves well understood, not only by the Macassars, but by the people of tribes with whose peculiar dialect they may not be familiar. On our first arrival, the natives, from having been long accustomed to address strangers in this language, used it when conversing with us, and the consequence was, that some vocabularies were collected which consisted almost entirely of this patois, under the supposition that it was the language of the aborigines.

As the great inland tribe to which I have already alluded may be considered as one of the most interesting communities on these northern coasts, I propose entering into some details with regard to the origin and progress of our intercourse with them. We had scarcely been established at Port Essington more than a few weeks, when it became evident that by far the greater portion of the axes, iron, clothes, &c., that the natives obtained from our people, were carried into the interior for the use of the inland tribes. We learned, also, that an individual belonging to one of these tribes was residing among the natives in our neighbourhood. He was a tall, handsome young man, and, from the circumstance of our supposing that he was employed upon a diplomatic mission, he was called "the ambassador" by our people, a name that soon superseded his proper appellation, Manougbinoug. He had attracted attention from the first, by his unassuming yet somewhat dignified manners, and from his being always a mere looker-on, while the other natives were busily employed either in assisting our people, or in procuring food. He was, in fact, on a visit, and was treated with great consideration, not only by the tribe with which he was residing, but by all the natives who happened to be in our vicinity. This young man returned to the hills about six months after our arrival, taking with him a Macassar man who had been engaged in the service of Sir Gordon Bremer, but who, being possessed of a wandering disposition, suffered himself to be enticed away from the settlement. Timbo, the man in question, returned among us after an absence of several months, and spoke in the highest terms of the reception he had met with from the people of the interior. He described them as being much more numerous and better organized than the coast tribes. One great chief, whom he dignified with the title of "rajah," possessed control over several large communities, each of which had also its own chief. The people derived their subsistence from the spontaneous produce of the country, which appeared to be in great abundance. The soil was not cultivated, but a kind of grain, which grew upon the alluvial banks of the lakes, was collected and prepared for food by pounding with stones, cakes being formed of the meal, which were baked in the ashes of their fires. This grain, with wild yams, and the roots of a rush called "marowait," constituted their chief vegetable food. The yams were described by Timbo as overspreading the face of the country. Their animal food consisted of the kangaroo, opossum, and wild-fowl (which last abounded upon the lakes), with a few fresh-water fish.

Timbo, on returning to the settlement, informed us that a large party of inland natives purposed visiting us in the autumn, the season usually selected by them for making distant excursions.

This information proved to be correct, for, in the month of September, volumes of smoke were seen rising to the south-east, which, as our natives informed us, indicated that a party of people was advancing towards the coast, and burning the dry grass for the purpose of driving out the kangaroos, which are then easily speared in the confusion. We were, however, in a certain degree disappointed, for the party, which consisted of about forty men, halted a few miles to the south of the settlement, and, after remaining there a few days, returned into the interior without visiting the camp. Yet some little intercourse took place, for on two or three occasions the men who were employed in tending the cattle in the forest accidentally met with them. I think it probable that they sometimes approached the settlement sufficiently close to see what was going on, for, on returning one day from a shooting excursion, I encountered the entire party in the pathway, about half a mile from the houses. They stopped short on seeing me, and appeared to be inclined to run away, but after a little deliberation they squatted down in a row by the wayside. I subsequently learned that this was intended by them as a sign of peaceful inclinations, and that, if I had stopped and spoken to them, they would have accompanied me into the settlement, as, partly from pride, and partly from timidity, they wished to be attended during their first visit by one of the officers of the establishment. Such, however, is *their* account of the affair; but not knowing at the time the peculiar state of their feelings, I adopted the plan that we had found from experience to be the best calculated to give confidence to timid strangers, and walked quietly past, without noticing them particularly. When some distance away from them, I turned, and saw that they had arisen, and were walking gently towards the settlement, but they must have altered their mind, for the next day we learned that they had taken their final departure for the interior.

During the following autumn we were more fortunate, for a party, amounting to upwards of thirty, headed by a tall, active chief, named Alarac, marched at once into the settlement, and remained among us nearly a week. This chief was nearly six feet two inches in height, but his limbs were spare and sinewy. He differed in this particular from the people who accompanied him, the latter being for the most part sturdy-looking men, with plump and well-rounded limbs, and, although by no means short in stature, still not remarkable for their height. They appeared to be a well-fed, comfortable people, but their most striking peculiarity consisted in the calm dignity of their manners. Although evidently pleased with the reception they met with, and surprised at the novelties that presented themselves to their view, they carefully abstained from displaying any approach to the

monkey-like vivacity which usually characterises Australian aborigines when they first meet with strangers. Nor were they endeavouring to enact a particular part, as we were inclined to suppose, for we subsequently learned that this style of manner is natural to them, or, at all events, such as they generally adopt.

Our visitors were evidently adorned for the occasion. Each man, with the exception of the chief, was painted from head to foot with a red substance which is found in the hills, supposed to be meteoric iron.* Their only clothing, if such it may be called, consisted in a large tassel made from the fur of the opossum or kangaroo, which was suspended before them from a waist-belt composed of the same materials, and which was certainly an improvement on the state of perfect nudity in which the coast natives delighted. We afterwards found, also, that their women invariably wore before them a mat formed of rushes, about two feet deep and three feet wide, evincing a sense of decency not common among the aborigines of this continent. The weapons were spears or darts, headed with lozenge-shaped pieces of quartz or slate, very regularly formed; *mómeras*, or throwing sticks of great length; and heavy two-handed clubs. Their hair, which was generally fine and somewhat curled, was adorned with little tufts of parrot's feathers or opossum fur, and they had altogether a very neat appearance. Nothing could exceed the deference and attention with which they were treated by the coast natives, who introduced each individual separately to the officers of the garrison, and were evidently much gratified by the favourable impression made upon us by the pleasing manners of their countrymen.

Our new friends, on their departure for the interior, were most pressing in their desire that their visit might be returned, and I feel convinced that no hospitality would have been wanting on their part. The very limited numbers of the garrison, and the amount of duty, which, although not arduous, required many individuals to perform it, rendered it impossible that a number of men sufficient to form an organized party could be spared. That they will be visited ere long, is, however, more than probable; and although no striking novelty may be discovered, still it would be interesting to know something concerning the social state of this people. I have already stated that I have reason to suspect that these mountaineers have a considerable mixture of Polynesian blood in their veins. This opinion was formed after having held long and close intercourse with the aboriginal tribes of some of the adjacent islands of the Indian Archipelago, whose pure Polynesian descent cannot be doubted, and whose customs appear to have undergone no change since the early migration of their race.

* Perhaps *cinebar*, probably red ochre.—ED.

At the same time, I must state that I have no grounds for supposing that any distinct tribe of Polynesians is at present existing in the interior. It would rather appear that, at some very distant period, a body of Polynesians (possibly of warriors, who had been driven out from some of the neighbouring islands, where the state of society resembled that of the South Sea groups when first discovered) may have been engrafted on an Australian, or rather, perhaps, on an "oriental negro" stock; for many circumstances which I shall have to state more distinctly below, would induce the supposition that the *aboriginal* inhabitants of this part of Australia very closely resembled the Papuas of New Guinea, or, what is almost the same thing, the aborigines of Van Diemen's Land. The circumstance of the mixture being more apparent, hereabouts, in the interior than upon the coast, does not militate against the correctness of this supposition, since we find that in all the neighbouring countries there exists a great tendency on the part of the Polynesians to occupy the upland or mountain districts in preference to the coasts. It is in such positions, indeed, that we find the superior breeds of this race; witness the inland inhabitants of Borneo, Celebes, Timor, Sumatra, and Madagascar. I think it proper to state that in making this suggestion I have no theory to support. The subject is one, indeed, that I only enter upon from the circumstance of those countries having been rarely visited by individuals who have had sufficient leisure to promote inquiries into the matter, and that, therefore, in the present state of our knowledge concerning these tribes, the information I have been enabled to collect from time to time may prove acceptable to parties desirous of solving the mystery that involves the early history of these eastern nations.

Our visitors from the interior spoke of a white people who dwelt in the country to the south, and who built houses of stone. This account excited a considerable degree of curiosity in the settlement, but I have no doubt that they alluded to our colonists in South Australia, or in New South Wales. Scraps of news pass so rapidly from one tribe to another, that an event of any importance is known over a large extent of country in the course of a very few months, although it is certainly difficult to detect the origin after it has passed through several tribes, and been subjected to the variations introduced by each individual narrator. In connexion with this subject, I may mention a circumstance, which, although irrelevant to that I have now entered upon, may prove interesting. The natives of New South Wales, and, I believe, of South Australia also, have long been in the habit of alluding to certain monster amphibia that are said to exist to the north. We found the same report prevalent on the Coburg Peninsula, but here it was to the south, in Van Diemen's Gulf,

that these creatures had their abode. They proved to be a species of "dugong," an animal, I believe, only recently known to naturalists. The flesh is esteemed a great delicacy by the natives, but they can only succeed in taking the young ones, the full-grown animals being too formidable for them to encounter in their frail vessels. I obtained two skulls, from which comparative anatomists may probably detect the class to which they belong. They are in the possession of Sir Everard Home, of H. M. S. *North Star*, to whom I gave them, from the supposition that he would arrive in England before me. The head somewhat resembles that of the "Morse" or Sea-horse, two tusks projecting downwards from the upper jaw.

But to return to the aborigines. I have already alluded to the Jalakuru tribe as occupying the coast to the eastward of the Coburg Peninsula. Although the territory they inhabit is remote from the settlement, individuals of the tribe were constantly residing with us, and some of these, from their activity, intelligence, and good-temper, became great favourites with us. They were also generally selected as guides when making excursions either by land or water, and always evinced great readiness in embarking on voyages to the Indian islands, whenever their company was desired.

The Jalakuru tribe, although it resides occasionally upon the coast, generally occupies the uplands near the termination of the hill range that has been already mentioned. This tract of country is called Merkilallal. It is open and fertile, and is traversed by a chain of small lakes, which abound with water-fowl. The wild yam is also found here in great plenty. Mr. John Mac Arthur, the son of the commandant of Port Essington, visited Merkilallal, about two years ago, and was received with great hospitality, indeed with a considerable degree of ceremony; for on landing from the boat, he was escorted by an armed guard to the spot where the tribe was assembled to receive him. Our intimacy with these people will prove very favourable to the extension of our intercourse with the natives along the coast to the eastward, since they are well acquainted with the tribes in their neighbourhood, and have always shown the greatest willingness to accompany exploring parties.

The tribe or tribes which inhabit the Goulburn Islands, do not require any lengthened notice, as they were not found to differ materially from those of the Coburg Peninsula. In personal appearance, they rather resemble the Croker Island natives than the others, and are a fickle, and somewhat vindictive race. They occasionally prove very troublesome to the Macassar trepang fishers, and are much inclined to attack strangers, as was experienced by Captain King, when employed in surveying the coast

I was unable to obtain any details that could be depended upon with regard to the distribution of tribes upon the coast between Goulburn Islands and the north-west horn of the Gulf of Carpentaria. The inhabitants hereabouts appear to reside chiefly upon the uplands, but resort during certain seasons to the spots frequented by the Macassar trepang fishers. With the people inhabiting Arnhem Bay and the adjacent country we are however, better acquainted, from the circumstance of many individuals from these parts having visited the settlement from time to time in the Macassar prahūs. The trepang fishers describe this as being the most numerous and powerful tribe upon the coasts visited by them, and, when hostile, as being very formidable opponents. For some years past, however, they have been on the most friendly terms, and a considerable barter trade is carried on, tortoise-shell being very abundant here. The country occupied by this tribe is a spur from the great hill range. All the specimens of the tribe that we have seen were remarkable for their bulky forms; their chests, especially, being very fine and expansive. The lower extremities, however, are not very well proportioned, the curved shin being very common. Their features are coarse, the nose being particularly flat and broad, but the general expression is pleasing. All the males above the age of twelve or fourteen years that I encountered, had undergone circumcision. I was extremely particular in my inquiries, with regard to the origin of this custom, and I can confidently state that it was not derived from the Macassars, the latter affirming that it existed previous to the commencement of their intercourse with the coast. Indeed this singular custom is not confined to the tribes of the north-west horn of the Gulf of Carpentaria. Flinders observed a case upon the Wellesley Islands, and the custom is also prevalent among the natives of certain parts of the south coast of Australia. It will be difficult, perhaps impossible, to discover now the origin of this custom. I should observe that a peculiar formation prevails among the aborigines of this part of Australia, and also of the adjacent coast of New Guinea, which renders the deprivation they undergo exceedingly conducive to comfort and health.

The western side of the Gulf of Carpentaria, as far to the south as Limmen Bight, appears to be well peopled; but beyond this, as far as the head of the Gulf, the natives are few and scattered. Here, indeed, the means of subsistence are not very abundant. The mud-banks, which extend far out to sea, render it difficult to obtain a supply of fish; and vegetable productions suited for food do not seem to be very plentiful, probably from the nature of the soil (a comparatively recent alluvial deposit) being unfavourable to the growth of the wild yam, or rather, per-

haps, it has not yet had time to extend itself over the face of the country.

I have observed that upon the northern coasts of Australia, the amount of the population upon a certain tract of country, is great or small in proportion to the quantity of *vegetable* food it produces. However abundant animal food may be, a toilsome search for edible roots gives almost constant occupation to a portion of every tribe. Women and children labour for hours together, with no other implement than a pointed stick, in following up the creeping stem of the wild yam through the earth until the root is arrived at, often at a depth of six or eight feet below the surface. A certain proportion of vegetable food appears, indeed to be absolutely necessary to their existence, and they willingly forego the use of animal food, if this more grateful diet can be obtained in sufficient abundance. Boiled rice, without any condiment, they will accept as their sole food for days together, and scarcely seem to wish for change.

It was the intention of Mr. Earl to have added to this paper his observations on the aborigines of the neighbouring islands of the Eastern Archipelago; but indisposition for some time prevented his accomplishing the task, and when scarcely recovered, he re-embarked for Australia. This will account for what may seem a rather abrupt termination of the above interesting article. We had hopes that Mr. Earl would at some future period continue these interesting ethnological notices; but grieved are we to state that these hopes have been frustrated by his death. He was drowned, by the wreck of the vessel in which he had taken his passage to Port Essington.—ED.

XII.—*Remarks on the Lakes of Benzerta, in the Regency of Tunis, made in May, 1845, by Lieut. SPRATT, H. M. S. Beacon, F.G.S. Communicated by Commander GRAVES, F.R.G.S., &c.*

THESE two extensive lakes, in the northern part of the Regency of Tunis, have hitherto been but little known; few modern travellers having visited them, and even those who have, or ventured to describe them from the report of the natives, have been led into many errors and given exaggerated accounts of their extent and depth; each apparently has copied the errors of his predecessor. Thus Lithgow, Shaw, and lately Sir G. Temple, have doubled the actual extent of these lakes, and added to their depth sevenfold.

These errors have doubtless arisen from two causes: viz. the difference between the Tunisian and English mile, which is nearly a third less in the former; and secondly, the ignorance of the natives themselves. This ignorance is somewhat strange, when it is known that the lakes are two valuable preserves of fish, from whence the populous town of Tunis is entirely supplied during a great part of the year, and the fish transported by camels every evening.

The lakes are rented from the Bey of Tunis for a sum nearly amounting to 4000*l.* per annum, by Ben Ayed, one of the wealthiest and most influential Arabs in the Regency, who has several boats upon the lakes; yet neither the proprietor nor the men constantly employed upon the fishery, possessed a correct knowledge of the waters, and we were led to expect from them, as well as from the above travellers, a depth varying from 10 to 50 fathoms.

The lakes have often been noticed by the ancient and middle-age authors, under the names of Hipponitus Lacus and Sisaræ Palus.

The Hipponitus lacus was the more northern and larger of the two lakes, and answers to that of Benzerta, taking its modern name from an important fortified town situated at its mouth. The Sisaræ Palus is now called the Lake of Gebel Ishkel, from a high and picturesque mountain rising from its southern shore, but which must have been formerly an island, as it is now separated from the plain by an extensive marsh.

The two lakes run in an E.N.E. and W.S.W. direction of each other, and are each about 8 geographical miles long. The Lake of Benzerta is $5\frac{1}{2}$ miles broad, whilst that of Gebel Ishkel is only $3\frac{1}{2}$; this latter is a remarkably turbid, shallow lake of fresh water; but the former is clear, and nearly as salt as the sea, with which it communicates.

The turbid state of the water in the Lake of Gebel Ishkel arises from the wasting of clay banks on its margin, and muddy streams flowing into it from the plain of Mata: the hills surrounding which, as well as the lake itself, with the exception of Gebel Ishkel, which is composed of marble and slate, appear to consist of marls and sandy strata; the wasting of these soft deposits being thus continually carried into this inner lake, it is consequently fast filling up, and is now only 8 feet deep. Notwithstanding it is so muddy, the water is remarkably sweet to drink, and esteemed by the Arabs as very wholesome.

Fish abound in the lake, principally barbel and a sort of hering, but they are insipid and never eaten by the natives. The grey mullet and bass, which frequent it to spawn, are very fine. Fresh-water shell-fish are rare in the lake, but I procured a species of unio from one of the streams flowing into it.

In some of the clay-banks along the north and east shore of the lake are abundance of marine fossils, principally a cardium, which, by the wasting of the cliffs, are washed along the shore, the sands of which in consequence present the singular appearance of a sea-beach encircling a fresh-water lake; and until I discovered the localities from whence they were derived, I was led to suppose that they had been living inhabitants of this lake at no very distant period of time, when of course the waters were salt; and the scarcity of fresh-water shells, leant to the idea of its recent conversion from a salt to a fresh lake.

The Lake of Gebel Ishkel communicates with that of Benzerta, by a meandering channel or river, through a low neck of land about 2 miles broad, which separates the two lakes from each other, and which is called Tinja or Tinsha.

The river is navigable for boats of not more than two feet draft of water, its general depth is 6 feet, and its breadth 25 yards; but at the entrance into the Lake of Gebel Ishkel there are shallows, with a very rapid current, against which our boat had great difficulty in contending.

Above the shallows there is a ferry, opposite the Marabout of Seedy Alle Hassan, which is completely enveloped by a small grove of trees. This spot appears also to have been the site of an ancient town of some importance, as there are considerable remains on both sides of the ferry. The character of the ruins is that of a late Roman or middle-age date, and one ruin, partly standing, appears to have been a Christian church.

Several detached ruins occur on the shore of both lakes, which appear to have been merely the fortified habitations of the landed proprietors, and are called Bourges by the Arabs; but the natives have a tradition, that the ruins of a considerable town exist beneath the lake of Benzerta, at the point of Sbeah on the south shore, where there are some massive Roman walls on the beach and rocks under water for several yards out into the lake, that give probability to the tradition.

The greatest depth of water in the Lake of Benzerta, is 8 fathoms, with an average of from 5 to 6 throughout. The channel by which it communicates with the sea is at its N.E. angle, and is about 4 miles in length, and half a mile broad, except near its mouth, where it is contracted into a narrow winding canal. In the wide channel, there is a depth of from four to seven fathoms, but in the intricate part between the fishery and the bar at the mouth of the canal, which in its windings is nearly a mile in length, there is from 2 to 10 feet water only. Across one part of the channel, there is a solid stone bridge of seven narrow arches, and again a little below it the channel is obstructed by rocks, said to be the foundation of another bridge.

The influx and reflux of the waters into the Lake of Benzerta appears, from the report of the natives, to be in no way influenced by, or indicative of, a tidal rise and fall of the Mediterranean, but to be due to the winds and rains only. During the winter months the current flows almost constantly out, owing to the great supply of fresh water which the Lake of Benzerta receives from the upper lake; an occasional rise of the sea above its usual standard during certain winds will then, for a short time, cause slack water, and sometimes a brief influx. During the summer months the streams which supply the fresh-water lake having become exhausted, the water ebbs and flows with every alternate rise and fall of the sea, which the daily change of land and sea-breeze produces. The water in this part of the lake is always clear, the matter brought down from the upper lake being deposited before it reaches the narrow outlet near the town. There is, consequently, no alluvial encroachment or filling up the mouth of the canal, which is important, in respect to any future attempt to deepen the channel, and open the lake as a harbour. The alluvial deposition takes place principally near the mouth of the Finsha, and along the west shore of the lake, where there are extensive shallows and two low islands that have risen from this accumulation. Besides Benzerta, there are two large built villages on the promontory of Schara, which was anciently the Hippos Prom.

This promontory, as well as the district around Benzerta, for three or four miles, is exceedingly fertile and beautiful, being laid out in large olive-groves, vineyards, open pasture and grain land, much resembling park scenery in England; and the oil produced is said to be little inferior to Florence oil. There are few trees growing to the south of the promontory of Schara, the country being naked and unfenced, and occupied principally by the wandering tribes of Arabs who live in tents, there being only one built town in the whole district, viz., that of Mata or Mahta, which appeared to be nearly as large as Benzerta, and surrounded by low mud walls.

The capabilities of the country do not however cease where the groves and the better sort of cultivation ceases; but, on the contrary, a rich soil covers the whole face of the country, and the hill summits are as capable of producing corn as the plains; neither is the country neglected, for this district around the lakes, and the valley of Mata is one of the most productive in grain in the regency.

The pastoral Arabs of the interior discourage and destroy as much as they can all spontaneous vegetation, and keep the mountains as bare as possible, which is done from two motives. They have thus the country comparatively free from wild animals,

and, having more available ground, they do not impoverish the soil by too frequent crops. The fields lie in fallow five or six years, and, of course, yield abundantly when tilled.

Locusts.—During our stay in the upper lake we witnessed one of those extraordinary visitations by which the labour and hopes of a season are frequently in a few hours destroyed throughout entire districts in this part of the world. A flight of locusts, brought by a strong hot S.E. wind, came upon us thick as snowflakes, both filling the air and covering the ground for miles. Myriads were destroyed in the lakes, or swept irresistibly into the sea. A flight of locusts is not, however, without its advantages to the natives, who esteem them as a great luxury when baked and dry. Large heaps were consequently exposed for sale in the markets of Tunis and Benzerta for some time after their visit.

Hot Springs.—At the eastern base of Gebel Ishkel there are four or five mineral springs, which are held in great repute for medicinal virtues by the natives, who resort to them almost daily, to bathe in small pools formed by hollowing out the sand round each jet which bubbles through the soil. These springs are salt, and of a temperature of about 110° ; but the natives showed so much offence at our immersing our hands into the pools, that we were unable to ascertain it correctly. In every other respect we experienced the greatest civility from the native whose hut we chanced to fall in with, but the party of soldiers and fishermen from the town who were sent with us from Benzerta, frequently showed fear and mistrust when we were encamped on the shores of the upper lake, and represented the Arabs of that district as lawless and wild.

XIII.—*On the Mouths of the Jamoor River, Western Africa; being a Letter addressed by the Rev. JOHN CLARKE to the Rev. JOSEPH ANGAS, dated July 16, 1845: communicated by Mr. ANGAS.*

My last hasty scrawl was very imperfect, and in this I wish to give you further information, especially of the river Jamoor, which has been supposed hitherto to be only a branch of the Cameroons. From recent observation, and from all the information we obtain here, we conclude it is a distinct river, having its course from the east of the Cameroons Mountain, and emptying itself by at least four branches into the Bimbian and the Cameroons Creek. The following are the countries given us through which it runs to the sea:—1st, Bavi; 2nd, Balūm; 3rd, Molalle; 4th, 'M'bonjun; 5th, Molarigga; 6th, Munggo; 7th, Bariibo (southern mouth); 8th, Ebonjo, Gañjii, and Bimbia (the

northern mouth). The branch running past the site of old Munggo towns, enters the Bimbian Creek, between Bimbia and Cameroons; and another branch, dangerous from the number of hippopotami found in it, enters the sea at the Cameroons. The map accompanying this will give you a better idea of its direction and bearings; and the notes taken by Captain Milbourn, Brother Merrick, and myself, may, to some extent, be useful in describing this river, and in correcting the common error into which Mr. Macqueen, Becroft, and others have fallen, in taking the Jamoor for a mouth only of the river Cameroons. On the 1st instant we ascended the Jamoor, entering it by the Munggo Creek. The following are our observations:—

At 9.45 A.M., entered the Munggo Creek from the river Cameroons.

At 10.15 A.M., course N. by E., rate $4\frac{1}{2}$ knots. Palm-trees and mangroves.

At 10.30 A.M., course W. A creek on the left (this was our right in going up. The right-hand side of the river is that which would be so if descending it). The sides of the creek covered with mud.

At 10.45 A.M., course N. and W.N.W. Width of creek, 1080 feet to 1200 feet. A narrow creek on the left. Some flowering shrubs.

At 11.5 A.M., Captain Martin's creek on the right. Very narrow; a few houses concealed among the mangroves, quarter of a mile from the creek.

At 11.15 A.M., course N. by W. Creek, 480 feet wide, serpentine, 300 feet at some places.

At 11.30 A.M., course N.W. The creek seems deep; but we have not taken soundings.

At 11.33 A.M., Bomona Creek on the left side, its width about 36 feet. This creek leads to a great oil country to the N.E. about six hours distant from Cameroons. Have seen people from Bomona at Cameroons.

At 11.40 A.M., a large creek to the left, said to run a long way, but to no particular town or country.

At 11.45 A.M., course S. A small creek on left side, landing opposite.

At 12 noon, N.W. by W. Creek to left small. Creek narrow and winding. Course changing from S. to E. in every direction, for about 10 minutes. Sharp turnings, trees touching across, some trees lying across the creek, got the canoe over them. At turnings stem and stern of the canoe touching the mud on each side. Monkeys and parrots seen, but no alligators.

At 12.25 P.M., entered the Jamoor, near Baribo. The stretch of the bar at "Green Patch" seemed almost straight to the S.

At 12.30 P.M., course N., two fishing-canoes came up, belong-

ing to towns above us on the left bank of the river; the men were armed, but very friendly, and gave us some fish. They belong to 'Njo, or Limbetown, from which King Bell took three or four men to kill, after the death of his father, to show that he was no longer a boy, but able to rule!

At 12. 40 P.M., opposite 'Njo; the name of the chief is Limbe. Course N.W.

At 12. 50 P.M., Amba's Creek on the left hand.

At 1 P.M., Skaris' town, course N.N.W. Towns join—are both on the left side. Many people ran to look at us. Mangroves disappear; sides of the river dry; clayey soil; reeds, grass, and trees of various sorts. Town 30 feet above the level of the river; current against us four knots.

At 1. 15 P.M., course N. 1. 20. Branch to right dangerous from 'Ngobó.

At 1. 30 P.M., course N.N.W. The tide does not seem to reach this height.

At 1. 40 P.M., passed Babingga Creek on the left. E.

At 1. 45 P.M., course N.W. by W. Current very strong.

At 2 P.M., course N.W. A canoe from Munggo passed us rapidly.

At 2. 15 P.M., course N.E. by N. A great change in the appearance of trees, &c.

At 2. 26, course N.E. A large channel 280 fathoms wide, for three quarters of a mile. Passed the side of old Munggo towns, from which the people were driven by King Agua, on the death of his father. A large branch of the river here running into the Bimbian and Cameroons Creeks.

At 2. 30 P.M., course N.E. A large branch of the river leading to Ebonjji and to Bimbia. Ebonjji is about half way to Bimbia; Munggo is about an equal distance from Bimbia and from Cameroons. An island above the branch leading to Munggo.

At 2. 40 P.M., reached the town of Bwamolumba (port of wood). The name of the chief Ebandé. Had a kind reception.

At 3 P.M. The second town down the Ebonjji branch is called Elumba a 'Mbengge. The name of the chief is Mūni. He is about 80 years of age, and remembers that when very young a white trader visited his town to purchase goats, but was not allowed by the Cameroon traders to return. Over the river the Bakum kum and Budiman slaves live in a town called Munda a ba Kung; they have a chief placed over them, called Eso a Malum. Another slave-town, called Molangga, his own, the left side of the main stream, opposite to the entrance to this branch. It is near to a large market, and not far from the town of the famed necromancer, Esungepa. Molangga signifies a beam of a house. The name of the chief of Molangga is Ekoloah. The

town of Esungepa is called Babingga; he has many people under him, and exercises fearful power for evil, from Romby to Malimba; and far into the interior. We saw the hemp-tree, a peculiar sort of palm, water-lilies, flowering trees of many descriptions; and a shrub like the eglantine was very common. Maize and plantains grew by the sides of the river; and near to these we saw, in many places, marks made by the numerous hippopotami in their struggles to gain the bank of the river, to feed by night on the maize and plantain leaves. The animal is here called 'Ngobó, and is killed for food by the natives. We saw many places like sheds, where slaves conceal themselves to shoot these creatures. The information we receive from the natives leads us to believe that the Jamoor is a longer river than the Cameroons, and that it is navigable for canoes for several days above Munggo. The Balum (Bakum?) people were seen as visitors or traders in one of the districts through which Brother Merrick travelled when up the Cameroons Mountain, and Ebände said he could send us safely up the river as far as the Balum (Bakum?) country, which would take about two days' paddling to reach it. This would give three days from Cameroons. Now, the Cameroons river, in its northern branch, runs but a short way above Abo, 15 hours' pull from Cameroons, and, in its south-eastern branch, a little way above Wuri, about two days' paddling from King Bell's town. The Jibarri and Bombarri people are at a very short distance from Cameroons.

XIV.—*Route from Ghát to Tawát, direct W., through the heart of the Great Desert or Sahára.** Communicated by Mr. JAMES RICHARDSON.

THIS is a route of the Great Desert which never yet has been travelled by the foot of Europeans or Christians. It passes, as stated above, direct W. through the heart of the Great Desert, consisting of 30 days' journey at a quick rate, and of 40 days at the ordinary rate of caravan travelling. I am indebted for the information concerning its wells and stations, their respective distances, and its general geological features, to a Tawát Moor (assisted by a Sherif of Ghát), whose acquaintance I made at that oasis, and who periodically travels this route, under a safe-conduct of Tawárik,† for the purposes of commerce. This is now not

* Sahrá, in the plural Sahára, signifies a desert level or plain.—F. S.

† Tawárik is the plural of Tárakah or Táríkah, the name of a Berber tribe, spelt by Leo Africanus (p. 630), Targa; k is commonly pronounced as g in get, gain, by the Western Arabs and Berbers: hence Bruce called himself Yagoubi e Ya'kúb.—F. S.

only the route of a considerable commerce between the western and eastern regions of the *Ṣahára*, but also that by which goods are conveyed from *Súdán* to *Timbuktu*, those along the banks of the *Niger* being more insecure, if not impracticable. Now and then, a few solitary travellers make their way on the banks and on the tributaries to the *Niger*, but hundreds of camel-loads of blue and black glazed cotton goods are brought this way *viâ* *A'hir*,* *Ghát* and *Sorat*, although making a circuit of some four months' journey, while that by the *Niger* is scarcely a month—a proof of how great must be the danger of the routes on the *Niger*. But even this route by the Great Desert is by no means a perfectly safe one, being at times infested by the *Shánbats*† and *Tawárikí* Berbers. Of course no European could travel this route unless under the protection of, and accompanied by, a powerful *Tawárik* Sheikh. I shall mention more at large the geological features of the route, after having enumerated the stations and the wells from the oasis of *Ghát* to that of *Tawát*.

1st Station, *Féwát*.—One day's journey. A small oasis with many wells. A little sand, but mostly rocky ground. For 12 days, indeed, the route from *Ghát* to *Tawát* is rocky; masses and groups of rocks and mountainous ridges, and some of the mountains are of great altitudes, at the base of which gush forth innumerable streams, as if touched by the rod of *Moses*; often joining together and forming perennial streams in the heart of this great thirsty wilderness. Many *Tawárikí* families are located at this station.

2nd, *Eidú*.—Two days and a half. The Arabs frequently speak of the distances, “two days and arrive on the *third* day;” or “three days and arrive on the *fourth* day;” that is, two days and a half, or three days and a half, or thereabouts. A running stream both in summer and winter, rocky country, and high mountains. Abundant small herbage for camels.

3rd, *Aghákaneirá*.—Two days. A perennial stream at the base of lofty mountains. A district densely populated by *Tawarik*.

4th, *Asjaneūwan*.‡—Two days. A continuous stream, as in the foregoing station. A great quantity of herbage, but no trees. All inhabited; flocks and droves of camels.

5th, *Zarzuwah*.—Running streams and country, as the preceding. One day's journey.

* In the maps *Haír*, *qu. Káhir* of *Ibn Batúta*, p. 242.—F. S.

† The *Shanbats* are a robber tribe of Arabs of *Wárkla* [*Idrist* by *Jaubert*, i. 255; *Leo Africanus*, Africa, *Guarghela*, p. 9; *Guargala*, p. 620; *Wurglah*, *Shaw's Travels*, pp. 67, 68] in the S. of *Algeria*, near *Séf*. They are nominally under the French. In the past year they were in open war with the *Tawárik* of *Ghát*.

‡ The *Tawárik* pronounce all words beginning with an *a* or *aleph* as if they began with a *y*. But I have generally preserved the correct spelling.

6th, *Tarseit*.—Two days. Many wells at the base of high mountains. District not inhabited, but visited at all times by Tawárik for watering their flocks.

7th, *Afará*.—One day and a half. Springs. Tawárik population with flocks and camels. Tents and *hashésh* or "herbage" houses. These houses are mostly of a round form, with a sort of court-yard surrounding them fenced with the same material. At Ghát these *hashésh* houses are made of palm-branches.

8th, *Halkam*.—Three days and a half. Sand, and water under it, but *brackish*. It frequently happens in the Great Desert that the water under the surface of sand is *salt*, though there are many exceptions. This is a rendezvous of numerous troops of banditti, but of the Tawárik of Tawát and Timbuktú, whose nominal sovereign is Bossa. Hereabouts begin the districts of these Tawárik or those of *Hakkár*, the Tawárik of Ghát being called *Azkár*.* The Ghat Tawarik are much more polite in their manners, and more acquainted with Christians, than those of Tawát and Timbuktú. But the Tawárik of Ahir and Aghades [Aúdaghast] are equally affable with those of Ghát, and as soft in their manners as the inhabitants of Súdán, whose territories join, and are thus mutually influenced.

9th, *Teikarat*.—Four days. A large stream or river of perpetually running water. District thickly inhabited by Tawárik, and numerous flocks and herds of camels. Large trees and abundant herbage.

10th, *Intafúsa*.—One day. A well in a valley sometimes visited by Tawárik shepherds and herdsmen. This is the site of a great number of remarkable ancient tombs, of most rude construction, some being only large piles of stones; showing, that a considerable population was once located in this place.

11th, *Amkeidah*.—Three days. One large and inexhaustible spring. Many Tawárik located about, but nevertheless frequented by Tawárikí and Shanbat banditti. Sand mountains in vast groups and masses to the W., and a deep broad valley in the E., from whose desert bosom a fine spring of water gushes forth. Herbage in abundance.

12th, *Amhágh*.—Two days. A well, ridges of mountains, and a few Tawárik inhabitants.

13th, *Ghárás*.—Two days. A well at the foot of lofty mountains, situate in a broad valley, and around abundance of herbage and shrubs.

* The *Azkár*, Tawárik, or those of Ghát, have Shafú for their present sultan; the *Hakkár*, or those of Tawát, are under Bossa, a man of gigantic stature. *Azkár* is commonly pronounced *Argér*, á having frequently the sound of é in Barbary: hence the Spaniards spell *Fás*, Fez.—F.S.

14th, *Tuwankaneí*.—One day. Several wells in a valley, and flocks and herds of camels feeding.

15th, *Amsarah*.—Two days and a half. A well and a little sand scattered around.

16th, *Abadaḡáh*.—Two days and a half. An immense spring of water, besides two other wells. Two or three date-palms, and herbage of all kinds thick and abounding. In the neighbouring heights palms and vines flourish. But few inhabitants.

17th, *Tuwanghakán*.—Two days. Many wells, palm-woods and herbage in abundance, but no inhabitants. This is the first country of *Tawát*, which consists of an almost innumerable congregated group of small oases, like so many islets in the Pacific, besides two or three large towns. Country undulating.

18th, *Ghábah*.—Two days and a half. Many wells and herbage. The country a vast expanse of plains. No inhabitants.

19th, *'Ain Saláh*.—One day. A town and principal district of *Tawát*, consisting of small villages and scattered houses. The soil is mostly sandy; sand hillocks and flat earthy surface. Here are forests of date-palms, all sorts of grain, flocks of sheep and goats, horses and camels, but no bullocks. The inhabitants are precisely of the same character as those of the town and oasis of *Ghát*, Moors, or a mongrel race of Arabs, *Ṭawárik*, and Negroes, and dress in the same way, with the black cotton turbans or head-wrapper covering the forehead and all the lower part of the face. This style of wrapping up the head has been borrowed from the singular and immemorial customs of the *Ṭawárik*.

The geological features of this route across the second* region of the *Ṣahára* are a remarkable contradiction of the vulgar error of representing the Great Desert to be "*an ocean of sand*," moving and tossed into billows by every wind which sweeps its desolate bosom, for we here find masses and groups of rocks covering almost the entire route, and ranges of mountains bounding it in all directions. In one place only is there a range or group of sand-hills. The water is most abundant, and generally good. The wells also are at no great distance from each other, the longest distance of a station not being more than four short days. Indeed, a *Ṭawárik* mounted upon his swift-footed *Mahrí†*

* The author says "central region" of the *Ṣahrá*: this, however, is a mistake. Leo, who well knew that country, has pointed out its natural divisions very accurately. 1. The Maritime Region, he says (pp. 4, 8), is *Barbary*. 2. Next to it is *Numidia*, or *Biládu-l-jerid* (in our older maps *Biledulgerid*), i. e. the land of dates. 3. *Libya*, called by the Arabs *Ṣahrá* (*Sarra*, p. 5), extending westwards from *El Wáhát* (*Eloacatum*, p. 6) to the ocean; and, lastly, *El Súdán*, the land of the Negroes (p. 6).—F. S.
† The spelling and origin of this word are doubtful. It is probably Berber and not Arabic. *Höst* (*Marókos*, p. 249) spells it *Meherí*, and says it is equivalent to the Turkish (he meant Arabic) *Hajín*; *haján* (*hajén* in *Barbary*) also signifies a very swift camel or dromedary. It is called *heiriyah* by Mr. Jackson (*Marocco*, p. 39). The word appears to be unknown to the Arabs.—F. S.

would go over this ground in less than two days. There is likewise frequent rain in this route, owing probably to the height and character of the mountains, which attract the clouds and condense them into rain. Frequently storms of wind and clouds burthened with rain pass over the Great Desert, but the flat bare surface and low ridges of mountains present no sufficient objects to attract the clouds and bring down the waters upon the thirsty bosom of the earth. These mountainous districts also greatly modify the heat, and I am told by Moors who have traversed them that it is positively *cold* the greater part of the year, that is to say, *it is not burning hot as in other parts of the desert*. However, it does not appear, owing to the rocky soil, that cultivation is at all considerable. The springs furnish man and his flocks and herds with water, and the rains and dews cause abundant herbage to break forth through the interstices of the rocky ground and to cover the face of the valleys; but there is little clear or good soil for the cultivation of corn except on the banks of one or two of the larger streams. Near Ghát there are seven streams, on the banks of which corn is cultivated.

The Moors pretend that coals are found in this route, but were coals ever so abundant they could never pay the expense of carriage to the coast. Of other minerals I have heard nothing.

Should this be published, it might serve as a rough outline for any European traveller who should have courage enough to undertake the perilous journey.

* See Clapperton's Travels, p. 14.—F. S.

XV.—*Barometric and Thermometric Measurements of Heights in North America.* By Captain J. H. Lefroy, Royal Artillery, Director of the Magnetic Observatory at Toronto.

THE observations described in the following pages were made during the execution of a Magnetical Survey of parts of the interior of North America. As this object required that the author should travel extensively throughout Canada, and the territory of the Hon. Hudson's Bay Company, it appeared desirable that he should combine barometric and other observations with it, when practicable. For this purpose he was provided with two of Newman's portable barometers with iron cisterns, which were carefully compared with the standard barometer of the observatory at Toronto before leaving it. The following table contains the results of the comparison, together with the constants given by the maker:—

Barom. 119. Neutral Point 28·816	Barom. 33. Neutral Point 29·922
Capacity . . . $\frac{1}{2}$	Capacity . . . $\frac{1}{2}$
Capillarity + . 0·046	Capillarity + . 0·046
Temperature . . 60°	Temperature . . 68°
Comparison — 0·063	Comparison — 0·036

And these data have been used in correcting all the observed readings of the instruments.

The principal series to be described commenced in April 1843; but some observations had been previously made at Bond Lake, a small body of water near the height of land between Lake Ontario and Lake Huron. At Lake Simcoe and at Lake Huron, the data are given below, the results were—

1.—2 July, 1841. Lake Simcoe above Lake Ontario, by observations at Holland Landing, made by Lieut. Younghusband	Fr. 498
2.—24 Jan. 1843. Lake Simcoe, above Lake Ontario, by observations at Barrier, made by Lieut. Lefroy, R.A.	497
3.—23 Jan. 1843. Bond Lake above Lake Ontario	783
4.—26 Jan. 1843. Lake Huron above Lake Ontario, by observations at Penetanguishene	365

TABLE II.

Date.	Upper Station.	Station.		Toronto.		Diff. of Level.	Redn. to the Water Level.	Above Lake Ontario.
		Corrd. Barom.	Air.	Corrd. Barom.	Air.			
2 July, 1841 .	Holland Landing. Lake Simcoe.	Inches. 29·396	69	Inches. 29·823	68	Feet. 412	Feet. 22	Feet. 498
* Jan. 1843. .	Barrier on ditto	28·870	28	29·333	29	409	20	497
23 Jan. ..	Bond Lake	28·220	33	29·129	35	833	50	783
26 Jan. ..	Penetanguishene	29·540	29	29·842	17	258	1	365

The cistern of the barometer in the Observatory at Toronto is 108 feet above the mean level of Lake Ontario; the level of the lake itself varies about 5 feet in different years.

* This date in the MS. could not be made out.—Ed.

ABSTRACT OF BAROMETRIC OBSERVATIONS made on the Route to Lake LA PLUIE.

All Observations reduced to a temperature of 32°.

STATION.	DATE.		Barometer.			Barometer Corrected and Reduced.		At Toronto.		Elevation above		Barometer.	Correction.
	May, 1843.		Observed.	Mer.	Air.			Barometer.	Air.	Toronto.	The Sea.		
N ^r . R. la Grasse, on the Ottawa	2	6 0 P.M.	30.200	44.3	..	30.183	29.901	51.7	..	—	+	+	
	7	0	.201	42.7	..	.186	.912	45.3	..			119	
	8	0	.242	41.7	..	.238	.906	43.8	..			..
Pte. aux Chenes	3	8 0 P.M.	30.154	52.4	48.5	30.114	29.853	42.4	..	265	77	..	
	0 5		.150	52.2	..	.111	.853	42.4	..			..
	0 50		.140	51.2	48.0	.101	29.863	42.5	..			..
Fox's Point ...	4	2 45 P.M.	30.150	64.0	55.2	30.079	29.926	46.0	..	201	141	..	
										—			
					48.3	30.109	29.856	42.4	..	227	115	..	
Pte. aux Sieoux	8	0 P.M.	30.240	42.6	38.3	30.226	29.968	39.3	..	228	114	..	
Aylmer	5	1 48 P.M.	30.240	52.2	49.2	30.212	30.006	39.9	..			..
	2 48		.238	51.2	49.0	.203	29.984	41.6	..			..
	9 0		.204	36.2	36.1	.204	.902	42.4	..			..
	6	4 27 A.M.	29.704	45.0	43.0	29.674	.757	40.5	..			119	
												33	
			.706	45.2	..	.680	..		..	
						30.069	29.912	41.0	..	14.1	201	..	

The village of Aylmer is about 12 m. above Bytown, and above the Chaudière Falls. The Ottawa at Bytown is 130 feet below L. Ontario, by the levels of the Rideau Canal, or 228 below the Observatory. If we allow 40 feet for the difference of level between the Ottawa at Aylmer and the same river below the Chaudière rapids and falls, the Barometric result will differ 47 feet from the result by levelling.

Bonne Clère . .	7	4 30 A.M.	29.652 .653	43.6 43.7	40.9	29.630 .637	29.450	53.4	168	174	119 33
12 m. above the Gr. Calumet.		10 30 P.M.	29.412 .412	48.3 48.3	47.3	29.414 .404	29.368	62.6	20	322	119 33
Fort Coulogne .	8	9 0 A.M.	29.500 .488	55.4 55.0	46.8	29.436 .432	29.532	49.6			119 33
		10 0	.482	56.3	47.3	.420	.536	52.2			119 33
		11 0	.480	55.8	49.2	.421	.538	53.4			119 33
			.510 .490	51.0 51.5	49.2	.490 .454	.538 ,,				119 33
Chapeau Island					47.7	29.442	29.535	51.8	84	426	
Two Juachins .	10	9 20 P.M.	29.602 .580	46.0 45.7	44.0	29.567 .550	29.646 .658	43.9 42.5	85	427	119 33
Roche Capitaine	11	1 0 P.M.	29.970	77.8	74.3	29.758	29.846	55.8	84	426	119
Trou Rapid, Ot- tawa		9 0 A.M.	29.790	53.0	54.3	29.747	29.846	54.6	92	434	
		3 0 P.M.	29.690	78.5	78.7	29.573	29.767	61.7	186	528	
		9 0 P.M.	29.672	50.3	49.0	29.627	29.751	48.9			
		10 0	.644	46.0	45.3	.610	.744	47.3			
					47.1	29.618	29.748	48.1	119	461	
Matawaen . .	12	8 0 A.M.	29.632	52.0	50.3	29.582	29.762	60.7			
		9 0 noon	.632 .551	58.3 70.3	57.3 69.7	.569 .454	.750 .700	56.4 62.1			
					59.1	29.535	29.737	63.1	190	532	

Abstract of Barometric Observations—continued.

STATION.	DATE.		Barometer.			Barometer Corrected and Reduced.	At Toronto.		Elevation above Toronto, The Sea.		Baromet.	Correction.
	h.	m.	Observed.	Mer.	Air.		Barometer.	Air.	Toronto.	The Sea.		
The Little River	12	8 0 P.M.	29.368 .325 .246	60.0 53.4 50.8	58.0 54.5 50.0	29.292 .261 .192	29.548 .534 .485	55.4 53.5 49.5	+	+	119 ,, ,,	
						29.248	29.522	52.8	236	578		
	13	7 30 A.M.	29.202	58.0	56.0	29.135	29.504	53.3	347	689	,,	6
Pie. de Talon L. de Grand Vase	2	0 P.M.	29.235	66.8	62.7	29.150	29.439	71.2			,,	
	3	0	.194	67.6	68.3	.096	.430	70.5			,,	
											,,	
P. de Gr. Vase, 1st.	14	8 0 P.M.	29.184	53.6	52.9	29.123	29.455	63.9			,,	
	9	0	.182	53.0	51.4	.122	.456	59.0			,,	
	4	0 A.M.	.200	36.8	36.0						,,	
2nd Postage						29.122	29.455	61.4	314	658		
	8	30 A.M.	29.274 .262	65.0 65.0	65.0	29.183 .174	29.488	60.4	296	647	119 33	
L. Nipissing	3	0 P.M.	29.125 .112	65.8 65.8	65.1	29.029 .028	29.390	70.6	353	69.5	119 33	..
	8	0 P.M.	29.012 28.994	72.0 72.2	73.2						119 33	..
L. Nipissing	9	0 P.M.	29.000 28.992	73.0 73.1	73.2						119 36	..

None at Toronto.

Mean of readings taken every 5 m. from 2.30 to 3.30.

None at Toronto.

Chaudière P. .	15	4 0 A.M.	28.905	63.0	63.2	28.818	29.275	53.7	440	782	119	
		9 0 A.M.	28.978	73.3	73.5	28.864	29.215	65.4	340	682	119	10
		4 0 P.M.	28.906	54.6	54.8	28.838	29.120	79.9	275	617	119	
Ricolet Falls .	16	1 0 P.M.	29.300	45.2	44.5	29.260	29.475	64.6			119	
			.292	45.2		.259					33	
		2 0	.314	45.0	44.2	.276	.475	65.7			119	
Lake Huron . .			.306	45.0		.274					33	
		3 0	.350	43.6	43.5	.315	.481	67.0			119	
			.342	43.6		.312					33	
		4 0	.350	44.4	45.0	.314	.500	67.5			119	
			.340	44.4		.311					33	
		5 0	.362	45.2	45.4	.324	.534	66.9			119	
			.358	45.0		.328					33	
		6 0	.442	45.8	46.0	.401	.567	64.7			119	
			.434	45.6		.403					33	
L. Huron . . .	17	8 0 A.M.	29.640	50.2	44.8	29.315	29.506	66.1	179	521		6
					48.3	29.596	29.837	43.6	219	561	119	
		2 0 P.M.	29.630	50.2	48.3	29.584	29.824	56.4	220	562		
L. Huron . . .	18	9 0 A.M.	29.750	45.0	42.6	29.721	29.964	48.0	220	562		
					59.8	29.644	29.891	59.9				
		3 30	.711	58.2	57.0	.647	.891					
St. Mary's r. . .	19				58.4	29.645	29.891	59.9	235	572		
		10 0 P.M.	29.618	35.6	33.2	29.594	29.855	41.7				
		10 5	.620			.606						
		3 0 A.M.	.654	34.2	30.0	.633	29.844	41.0				5

Abstract of Barometric Observations—continued.

STATION.	DATE. May, 1913.	Barometer.				Barometer Corrected and Reduced.	At Toronto.		Elevation above		Baromet.	Correction.
		Observed.	Merc.	Air.	Barometer.		Air.	Toronto.	The Sea.			
Lake Superior.	19	n. m. 8 0 A.M. 8 30	29.664 .680	53.0 53.0	49.8 50.4	29.602 .628	29.852	53.0	218	560	119	6
		2 0 P.M. 3 0	29.628 .626	65.2 63.4	53.8 53.0	29.532 .535	29.789 .773	63.4 60.1				
					53.4	29.534	29.781	61.6	230	572		
		9 0 10 0 3 30 A.M.	29.504 .502 .506	52.8 52.6 40.2	40.4 40.8 39.0	29.448 .446 .455	29.725 .709 .683	43.2 41.3 35.4				
,,	21	4 0 A.M.	29.052	49.0	48.6	28.998	..	..	..	..	..	..
		8 0 8 30	29.064 .060	53.6 54.0	53.0 53.0	28.990 .995	29.408	54.0	386	728		10
		3 30	28.974	70.0	68.0	28.866	29.261	70.6	385	727		15
		5 0	28.976	68.0	66.2	28.874
,,	22	midnight 4 0 A.M.	28.856 .854	46.3 42.2	45.2 38.9	28.806 .814	29.231 222	47.8 46.7				
					42.0	28.810	29.227	47.2	387	729		20
		8 0 A.M. 8 30	28.850 .850	45.0 45.4	40.6 40.6	28.802 .802	29.241	54.4	409	751		3

None at Toronto.

None at Toronto.

No. 33 was broken on the
23rd.

Michigan	8 0 P.M.	28.844	46.4	42.0	28.811	29.201	50.5	..	..	..
	9 0	.846	45.0	40.0	.827	.206	50.3			
	10 0	.852	44.8	40.2	.824	.204	50.8			
	23 5 0 A.M.	.980	37.8	37.2	.969	.209	48.0			
	6 0	.982	38.0	37.4	.961	.226	50.0			
L. Superior	7 0	29.000	43.4	39.0	.986	.233	53.4			
	8 0	.006	45.6	44.4	.971	.229	54.6			
				40.2	28.907	29.216	51.1	287	629	10
	8 0 A.M.	29.346	45.2	44.2	29.317	29.511	50.8	173	515	8
	8 30	.344	45.6	44.2	.315					
At the Pic	9 0 P.M.	29.262	50.0	43.2	29.171	29.556	51.3			
	10 0	.204	53.0	44.0	.173	.556	49.8			
	3 30 A.M.	.178	44.6	44.0	.127	.591	44.7			
				43.7	29.154	29.568	48.6	380	722	10
	8 0 A.M.	29.218	50.0	51.8	29.167	29.626	51.2			
L. Superior	9 0	.222	51.0	52.0	.171	.624	53.0			
	9 30	.220	52.0	52.4	.171	.624	53.0			
	11 0	.192	55.0	54.4	.126	.639	53.6			
				52.6	29.159	29.631	53.2	439	781	40
	7 0 P.M.	29.136	53.0	53.6	29.080	29.566	54.2			
26	8 0	.134	52.8	54.0	.078	.560	52.2			
	9 0	.134	53.2	55.0	.075	.542	51.5			
	4 30 A.M.	.024	49.2	48.0	28.970	.477	50.4			
	5 0	.024	49.0	48.0	.970	.471	49.4			
	6 0	.000	49.6	48.8	.940	.461	49.6			
				51.2	29.019	29.513	51.2	461	803	6

The woodwork of the Barometer became swollen to such a degree after a night in which it was exposed to the wet, that the brass guard at the cistern-end was burst, and the shade at the other end became immovable, no observations were made until June 2nd.

Barometric Observations—continued.—All with No. 119.

STATION.	DATE. June, 1843.	Barometer.				At Toronto.		Elevation above		Correction.
		Observed.	Mercur.	Air.	Barometer Corrected and Reduced.	Barometer.	Air.	Toronto.	The Sea.	
Foot of the Mount tain Porage.	2 10 30 A.M.	29.186	43.8	42.8	29.154	29.716	48.2
	33	.194	43.8		.162					
	36	.191	43.4		.159					
	39	.192	43.0		.160					
	42	.200	43.0	42.0	.171					
At the Port Ecarré, immediately above the pre- ceding.	11 46	29.084	46.0	46.0	29.161	29.716	48.2	509	851	..
	49	.084	46.0		.045					
	53	.088	45.5		.050	29.662	50.4			
	56	.083	45.5		.045					
	59	.080	45.0		.041					
Bail Port . . .	12 5	.080	44.5	43.0	.039					..
				44.5	29.034	29.662	50.4	580	922	
	9 30 P.M.	28.981	32.	32.0	28.967	29.403	40.9			
	35	.984			.970	.403				
	40	.964			.951	.403				
Décharge of the large flag-stones	3 3 10 A.M.	.953	28.	28.	.934	.245	43.2			12
					28.960	29.363	42.0	365	707	
	1 50 P.M.	28.860	54.		28.809	29.502	51.8			
	55	.855	54.		.804					
	2 0	.858	54.		.807					
			54.		28.807	29.502	51.8	653	995	6

Referring the observations at the upper station, above the great Falls of Kakabeka, to those at their foot, or the lower station, the difference of altitude is only 117 feet. The reputed height of these Falls is — 29

* The magnificent Fall of Kakabeka is described and a view of it given in Major Long's 'Narrative of an Expedition to St. Peter's River, &c.' in which work the height of the fall is said to be 136 feet.—Ed.

Referring the observations on the top of the hill to those at the lower end of the portage, we have 445 feet for the height of the hill in this portage, and 364 feet for the height of the upper end, or Chien Lake.—On reversing the barometer in the dark this evening, a great deal of electrical light was noticed in the vacuum.

Portage de Chien, lower end.	5 30 P.M. 45 6 0 15	28.770 .766 .762 .756	48.0 49.0 46.0 46.0		28.721 .714 .708 .702	29.533 51.7 29.539 50.9	..	..	..
Top of the Hill.	7 7 12 15 17 20 45	28.300 .292 .296 .291 .290 .282	45.0 45.5 45.2 45.0 45.0 43.0		28.711 28.250 .243 .247 .242 .241 .231	29.546 51.3 29.547 49.1	779	1121	4
Upper end of the Portage . . .	10 10 15 4 30 A.M. 35 5 0 15 30	28.356 .348 .352 .354 .359 .356 .365	30.0 30.0 40.5 41.0 42.0 41.0 41.0		28.242 28.344 .336 ..	29.547 49.1 29.323 47.2	1221 1075	1563 1417	..
Chien Lake . .	8 40 9 10 30	28.416 .412 .419	51. 52. 53.	59.	29.353 .347 .354	29.282 44.0			6
R. de Chien . .	9 15 P.M. 25 35	28.522 .536 .524	46.4 48.5 48.5	45.8 45.0	28.473 .482 .470	..	..	..	..

Sunday at Toronto.

None at Toronto.

Barometric Observations—continued. All with No. 119.

STATION.	DATE. June, 1883.	Barometer.			Barometer Corrected and Reduced.	At Toronto.		Elevation above		Correction.
		Observed.	Mer.	Air.		Baromet.	Air.	Toronto.	The Sea.	
R. de Chien . .	5	28.565 .578	41.5 42.0	41.7	28.530 .542	29.426	47.8	827	1169	
	8 10	28.685 .681	46.5 47.0		28.629 .625	29.451	48.0			
	30 35	.688	48.0		.629	.461	49.0			
Jordan's Pige.			47.2		28.628	29.456	48.5	773	1115	
Lower end of the Prairie Portage.	2 45 P.M.	28.612	56.0	53.0	28.572	29.470	50.6			
	50	.638	55.6		.569					
	55	.636	55.4		.567					
	3 0	.634	55.0		.565					
	5 10	.634 .634	55.0 55.0		.566 .566					
Middle of do. .	3 55	28.450	56.4	53.3	28.568	29.470	50.6	1852	1194	
	4 0	.444	56.2		.353					
	3 5	.444	56.0		.353	29.454	49.6			
	10	.444	56.0		.352					
	15 20	.444 .442	56.0 55.9		.352 .380					
			56.1		28.383	29.454	49.6	1025	1367	

Referring the observations at the upper end of this portage to those taken at the lower end, the difference of elevation is 104 feet.

Upper end of Portage.	6 57 7 2 7 12 17 22	28-442 .442 .442 .440 .440 .440	54-0 54-0 54-0 52-0 52-0 51-8	51-7 28-389 .389 .391 .391 .391	29-472 47-5	1019 1361	..
Savannah P. . .	6 12 30 P.M. 1 0 1 30 2 0	28-569 .578 .578 .572	56-0 57-0 57-4 58-0	58-0 57-9 56-0 57-1	29-606 .615 .615 .641	1019..	..
R. de Savannah .	7 9 0 30 3 30 A.M.	28-526 .518 .517	34-0 32-1 28-0	33-6 33-5 28-5	29-733 .733 .816	1402	..
L. of the 1000 Islands . . .	8 8 30 10 9 20	28-571 .561 .561	49-8 49-0 49-5	48-0 48-0 48-0	29-869 .890 .890	1151 1493	..
Ridge L. . .	8 7 0 A.M. 35	28-312 .302	51-0 49-5	48-0 44-0	29-883 29-777	1285 1811	..
French Port. . .	12 30 P.M. 1 0 1 30 2 0 2 30	28-402 .384 .403 .403 .395	55-0 54-0 55-0 54-8 53-5	53-0 53-6 53-8 53-6	29-671 .639 .632 .625	1529	55

The Savannah portage forms the height of land separating the streams which flow into the St. Lawrence from those which fall into Hudson's Bay by Lake Winnipeg.

This excessive difference of level appears due to the opposite states of the atmosphere at the two stations. The barometer at Toronto is considerably above the mean, and that at Ridge Lake below the mean.

2nd P. out of L. à la Crosse.	8 0 P.M.	28.672	57.5	50.0	28.599	29.445	49.0			
	9 0	.655	53.6	50.0	.590	.450	48.5			
	9 0 A.M.	.706	69.8	67.2	.601	.558	53.8			
	10 0	.717	70.5	68.0	.609					
	3 0 P.M.	.657	70.0	56.0	.541	.583	58.2			
	4 0	.668	65.0	54.0	.580					
Pge. into L. la Pluie.				57.6	28.587	29.529	53.6	894	1236	
	2 15 P.M.	28.525	63.8	66.0	28.433	29.639	73.5			
	30	.523	64.0		.431					
	45	.515	64.0		.423	.612	73.7			
				66.0	28.429	29.626	73.6	1174	1516	
L. la Pluie . .										
	9 0 A.M.	28.496	52.6	52.0	28.432	29.298	59.0			
	30	.500	52.0	51.5	.437	2				
	10 0	.515	52.0	51.3	.452	29.277	60.2			
	30	.520	52.0	51.6	.457					
L. la Pluie . .	11 0	.532	52.4	51.5	.469	29.255	61.8			
	30	.544	53.5	51.5	.478					
	1 15	.569	56.0	55.7	.498	29.226	64.9			
	3 0	.580	57.5	55.9	.505	.180				
				52.6	28.466	29.259	61.4	760	1102	7
L. la Pluie . .										
	7 0	28.639	51.0	48.0	28.580	29.172	60.2			
	8 0	.639	49.5	48.0	.580	.198	59.5			
	9 0	.650	48.4	47.6	.596	.195	57.2			
	14 3 0 A.M.	.707	46.0	43.1	.652	.174	52.3			
				46.2	28.602	29.185	57.3	707	1040	14

Barometric Observations.—continued. All with No. 119.

Barometric Observations.—continued.

STATION.	DATE. June, 1843.		Barometer.			Barometer Corrected and Reduced.	At Toronto.		Elevated above		Correction.
			Observed.	Mer.	Air.		Barometer.	Air.	Toronto.	The Sea.	
Fort Frances . .	15	<i>H. M.</i> 9 0 A.M.	28.720	59.0	46.0	28.643	29.625	50.6			
		30	.714	57.0		.643	.625	50.6			
		10 0	.724	55.2		.655	.625	53.6			
		11 0	.726	55.0		.657	.616	55.0			
		30	.739	58.0		.666	.616	55.0			
	12 0		.759	62.0	47.0	.676	.596	57.6			
					46.5	28.657	29.617	53.7	898	1230	20

Observations made during the Voyage of 1843.

THE barometers were suspended whenever a halt of sufficient duration was made; and the difference of elevation of each station above the Observatory at Toronto has been calculated by employing the nearest hourly observations made there, or sometimes the mean between two consecutive readings, as a corresponding observation. This method appeared preferable to that of reducing each observation to the mean barometric pressure at the level of the sea, although it is evident, on a comparison with the meteorological journal at Toronto, that, in some cases, very different states of the weather prevailed in the two localities. The elevation above the sea is found by adding the approximate elevation of the observatory, viz. 432 feet, to each difference of level. As a further correction, although in most instances insignificant, the approximate height of the cistern of the barometer above the water-level is entered in an adjoining column.

The mean height of the barometer at Toronto is 29.620 inches.

On referring to the observations on Lake Huron, it appears that the extremes of the differences of level by six comparisons, differ to the amount of 51 feet. The mean of the whole gives an elevation of 551 feet above the sea, being 55 feet less than that deduced by the observations of 1841 and 3 (antè), and 43 feet less than the elevation assigned on the maps of the Useful Knowledge Society. The greatest difference occurs on the 16th of May, when a violent westerly gale prevailed on Lake Huron, during which the barometer rose, between 1 and 6 p.m. at that station, 0.144 inch. While at Toronto, where the same gale prevailed to a much less degree, it rose only 0.092 inch during the same period. The barometer, therefore, was relatively higher at Lake Huron than at Toronto, and the difference of elevation is too small. The distance between the stations is about 300 miles. If we omit this comparison, the mean elevation is 560 feet, which is 45 feet less than the elevation found before. The extremes of the remaining five observations, however, differ to the amount of about 22 feet only.

On Lake Superior, at which from its greater distance from Toronto, and its different local influences, a less degree of correspondence in atmospheric condition might be anticipated than we should expect on Lake Huron, the discordances in the resulting differences of level are much greater, amounting to 288 feet in 12 observations. The barometric range observed in the 8 days of comparison was 0.826 on Lake Superior, and 0.611 at Toronto. The range of the barometer is generally below the mean at both stations during this period, the weather having been wet and un-

settled for several days, but to a much greater degree on Lake Superior than at Toronto; the minimum pressure occurs on the same day (22nd of May) in both localities; but between this minimum and the last day of observation (the 26th of May), the barometer rises 0.297 at Toronto, and only 0.110 on Lake Superior; hence it was relatively lower at the latter station, and the mean elevations deduced from the observations of the last three days is decidedly too great. It is 769 feet; the remaining 9 comparisons giving a mean of 643 feet. This quantity is 16 feet more than the received elevation, and makes Lake Superior 83 feet above Lake Huron instead of 33 feet, which is the difference of level shown by the same authority.

On referring to the observations taken along the route from Lake Superior to Lake la Pluie, they exhibit a tolerably regular progression, indicating an ascent from the above elevation of about 650 feet to an elevation of about 1500 feet, at which are found the principal sources of the waters that flow, in opposite directions, into the St. Lawrence and into Lake Winnipeg. The discordances indicate an uncertainty in individual observations of from 100 to 200 feet.

The barometer was unfortunately broken on the River la Pluie, and the series there terminates.

On Thermometric Measurements of Heights in the Hudson's Bay Territory.

THE following tables contain the observations of the temperature of boiling water made at various stations, and a comparison, at some of them, of the elevations deduced with the elevation resulting from the foregoing barometric observations. The data employed for the computation are those given by Lieut.-Colonel Sykes, *Trans. of Royal Geogr. Soc.*, Vol. VIII.

One thermometer only, marked M, was employed from Lake Superior to Hudson's Bay. It was graduated at a pressure of 29.450 inches, as marked on it by the maker, which would make the boiling point at the mean pressure of 29.980 inches, to be $212^{\circ} \cdot 91$, instead of $212^{\circ} \cdot 00$, if we allow a difference of $-1^{\circ} \cdot 0$ in the boiling point for $-0 \cdot 58$ inch of pressure. It was boiled again on the 25-6th July, 1843, at York Factory in Hudson's Bay, when the boiling point was found to be $213^{\circ} \cdot 37$, the pressure being unknown; and it was boiled at Toronto, after its return from the North, but not until the lapse of a year, viz., in December, 1845. The Tables I. and II. exhibit the result of several observations made at Toronto under various circumstances of atmospheric pressure and temperature.

Each observed boiling point is reduced to a mean pressure of $29^{\circ}620$ on the assumption of a difference of $\pm 1^{\circ}0$ in the boils point, for a difference of ± 0.58 inch in the pressure. The elevation of the Observatory above the ocean is 432 feet nearly, and if we allow a difference of $1^{\circ}0$ for 509 feet of elevation, the correction to reduce the observations to the zero plane, or level of the ocean, will be $\pm 0^{\circ}67$.

Abstract of Observations of the Boiling Point at Toronto.

TABLE I.

DATE.	Barometer Corrected.	Air.	Observations on Boiling Point.	Correction +	Reduced to mean Pressure.	Reduced to Zero Plane.
1845.						
Dec. 1	29.563	21.4	213.33	.10	213.43	
" 10	.614	15.9	13.33	.01	13.34	
" 12	30.184	19.4	14.50	-.97	13.53	
" 13	.009	28.8	14.25	-.67	13.58	
" 15	29.519	33.3	13.28	.17	13.45	
	29.778	23.7	13.74		213.47	214.14
" 16	29.672	27.0	213.60	-.09	213.51	
" 47	.610	32.3	13.36	.02	13.38	
" 18	.400	33.6	13.18	.88	13.56	
" 19	.372	11.0	13.01	.43	13.44	
" 20	.716	10.3	13.88	-.12	13.76	
	29.554	23.7	213.41		213.53	214.20
" 22	29.607	12.4	213.69	.02	213.67	
" 23	.872	17.7	14.37	-.44	13.93	
" 24	.986	19.4	14.46	-.63	13.83	
" 26	30.018	15.0	14.84	-.69	14.15*	
" 29	29.427	34.4	13.10	.33	13.43	
" 30	.615	27.9	13.69	.01	13.70	
	29.754	21.1	214.03		213.71	214.38
" 31	30.008	11.6	214.54	-.67	213.87	
Jan. 1846	29.638	31.2	13.70	-.05	13.65	
" 2	28.872	37.6	11.57	1.29	13.26	
" 3	29.443	31.6	13.50	.30	13.80	
" 5	.748	29.9	14.02	-.22	13.80	
" 6	30.032	31.8	14.51	-.71	13.80	
	29.623	25.9	213.71		213.70	214.37

* The observation on the 26th December is rejected: it was considerably in excess of the others, and possibly there may have been a break in the column of mercury, which escaped notice.

The barometric range at Toronto is 1.65 inch, by an average of five years (1839 to 1844) equivalent to $2^{\circ}85$ in the boiling point, or to the effect of a difference of elevation of 1400 feet. The above table contains a range of 1.31 inch, and the same observations are arranged in the following Table II., in the order of pressure, for the purpose of illustrating the correspondence of Pressure and Boiling Point.

TABLE II.

DATE.	Barometer Corrected.	Air.	Observations on Boiling Point.	Correction +	Reduced to mean Pressure.	Reduced to Zero Plane.
1845-6.						
January 2	28·872	37 ^o ·6	211 ^o ·97	1·29	213 ^o ·27	
Dec. 19	29·372	11·0	13·01	0·43	13·44	
„ 18	·400	33·6	13·18	·38	13·56	
„ 29	·427	34·4	13·10	·33	13·43	
January 3	·443	31·6	13·50	·30	13·80	
	29·303	29·6	212·95		213·49	214·15
Dec. 15	29·519	33·3	213·28	·17	213·45	
„ 1	·563	21·4	13·33	·10	13·43	
„ 22	·607	12·4	13·19	·02	13·67	
„ 17	·610	32·3	13·36	·02	13·38	
„ 10	·614	15·9	13·33	·01	13·34	
	29·583	23·1	213·40		213·45	214·12
„ 30	29·615	27·9	213·69	·01	213·70	
Jan. 1	·638	31·2	13·70	—·05	13·65	
Dec. 16	·672	27·0	13·60	·09	13·51	
„ 20	·716	10·3	13·88	·12	13·76	
Jan. 5	·748	29·9	14·02	·22	13·80	
Dec. 23	·872	17·7	14·37	·44	13·93	
	29·710	24·0	213·88		213·72	214·39
Dec. 24	29·086	19·4	214·46	·63	213·83	
„ 31	30·008	11·6	14·54	·67	13·87	
„ 13	·009	28·8	14·25	·67	13·58	
„ 26	·018	15·0	14·84	—·69	14·15	
Jan. 6	·032	31·8	14·51	·71	13·80	
Dec. 12	·184	19·4	14·50	·97	13·53	
	30·044	22·2	214·45		213·72	214·39

The thermometer was boiled in a copper vessel, in snow water, care being taken to allow a full escape to the steam through holes in the covering.

Taking the mean of the first ten observations in Table I., viz., 214^o·17 for the boiling point at the level of the sea, we have the following determinations:—

By the maker, date unknown	212 ^o ·91	at bar.	29 ^o ·980
At York Factory, July, 1843	213·57	„	unknown.
At Toronto, Dec. 1845	214·17	„	29·980

Clearly indicating a rise in the zero of the thermometer similar to what has been frequently remarked in the zeros of air thermometers (British Assoc. Report, 1840, p. 46), and the same circumstance appears in the series of observations made at Toronto, where the mean of the last five days exhibits a rise of a quarter of a degree (0^o·24) above that of the first five days.

It is evident from Table II., that for the determination of moderate elevations, such as those of the great fresh-water basins, and dividing ridges or heights of land, in the interior of the North American continent, but little confidence can be placed in any individual results. Observations, to be of value, must be repeated in every variety of weather and of atmospheric condition. The barometric range at Toronto is nearly equal to the whole difference of pressure corresponding to the elevation of the great height of land which forms the northern boundary of the valley of the Missouri, and which divides the streams which flow into that river and the St. Lawrence from those which fall into Hudson's Bay. Nor is anything gained by a multiplication of thermometers. The effect of uncertainty in the observation, or the zero, is inconsiderable compared with that which arises from uncertainty in the barometric pressure. Neither, again, is there much advantage in corresponding observations of the barometer, unless the mean barometric pressure on the spot is known, or comparative observations are made at a known station not very distant. At the present time the mean pressure is not known at any spot north of Lake Superior.

From the great difficulty attending the safe transportation of barometers in long journeys in the interior, the use of thermometers is much more convenient to travellers; and, in 1836, several of these instruments were sent into the country by the Royal Geographical Society, at the instance of Sir John Richardson, two of which were employed by the writer, together with the thermometer M described above. As they were broken before reaching Canada, no opportunity was afforded of verifying their boiling points.

The general elevation of a region is, however, a physical fact of so much importance, as modifying the circumstances of production and climate depending upon its geographical position, and with reference to the great normal plane of the ocean, of so much interest in a geological point of view, that imperfect observations in a country where so few have been made may not be without interest. Those made on the magnetic survey are scarcely numerous enough to give the mean temperature of the boiling point in the districts in which they were made; but they are generally accompanied by a slight notice of the weather, as a guide to the probable *sign*, either + or —, of the *error* in the height deduced.

The atmospheric pressure at Toronto is liable, as has been stated, to an extreme variation of 1.65 inch. In order, however, to obtain an approximation to the probable difference of any single observation from the mean, the "probable error" has been

calculated for the hours of 9 A.M. and 3 P.M. of the months of December, 1843, and July, 1844, by the formula,

$$E^2 = \frac{0.4549 : \Sigma (x - a)^2}{n (n - 1)}$$

Where $\Sigma (x - a)^2$ = the sum of the squares of the quantities found by subtracting the mean pressure for the month (a) at each of these hours, from the readings at the same hour on successive days (x). The probable error of each separate reading is $= E \sqrt{n}$, and has the following values:—

	Inch.	
December, 9 A.M.	0.147	= 75 feet of elevation.
" 3 P.M.	0.141	= 75 "
July, 9 A.M.	0.105	= 53 "
" 3 P.M.	0.091	= 46 "

The value of the difference in pressure is here given in feet of elevation, and it appears that fluctuations in the barometric pressure cause a probable error of about 60 feet in any single altitude deduced from the temperature of boiling water at Toronto; the possible error, or the greatest error which can arise under extremes of pressure being about 700 feet. The probable error deduced from the series in Tables I. and II., which exhibits a range of barometric pressure somewhat greater than usual in the same number of observations, is 0.206 inch, equivalent to 105 feet.

In the travelling observations of the boiling point, the water of the nearest lake or river was always employed, usually containing calcareous matter, which gradually formed a thin deposit on the bulb and scale of the thermometer. It appeared, however, by observation at Toronto, that the presence of this coating made no sensible difference in the boiling point, nor did it appear to make a sensible difference whether snow water or hard water were employed.

Neglecting the value of the boiling point at the mean pressure, deduced from the graduation by the maker, of which the date is unknown, it is assumed in the following calculations, that the observation at York Factory gave the boiling point at the level of the sea, at that date; and the rise of 0.80 indicated by the subsequent observations at Toronto took place while the instrument was in use, viz., from July, 1843, to October, 1844, which allows a rise of + 0.054 a month, and the observed boiling points have been corrected accordingly.

The other thermometers N and O, which were obtained at York Factory and Norway House, were also boiled at the level

of the ocean, at the former stations for comparison with thermometer M. The observed boiling points were—

		M	N	O	Air.
July 25th	. .	213·23	212·06	211·65	50·
„ 26th	. .	213·51	212·36	211·79	50·
		213·37	212·21	211·72	

The thermometer marked N continued in use until May, 1844, when it was found to be broken, and the thermometer O until October, 1844, when it was also broken.

The following Table III. contains the differences in the boiling points observed with the three instruments, and serves to show whether the zero correction of N and O underwent a gradual change similar to that of N.

TABLE III.

DATE.	M-N	M-O	N-O	DATE.	M-N	M-O	N-O	DATE.	M-N	DATE.	M-N
1843.				1843.				1844.		1844.	
July 25	1·17	1·38	0·41	Oct. 2	1·14	1·51	0·37	May 4	1·02	Aug. 3	1·10
„ 26	1·15	1·72	0·57	Nov. 1	1·21	1·43	0·22	„ 26	1·15	„ 6	1·09
Aug. 5	1·06	1·41	0·33	„ 10	1·04	1·23	0·19	„ 30	1·05	„ 12	1·21
„ 13	1·04	1·51	0·47	Dec. 2	1·05	1·29	0·24	June 2	1·10	„ 14	1·25
„ 24	0·96	1·50	0·54	1844.				„ 8	0·98	„ 19	1·16
„ 29	..	..	..	Jan. 4	1·03	1·42	0·39	„ 15	0·81	„ 30	0·97
Sept. 9	0·99	1·50	0·51	Feb. 2	1·07	1·36	0·29	„ 21	1·13	Sept. 12	1·08
„ 13	1·15	1·47	0·32	Mar. 4	1·19	1·43	0·24	„ 24	1·21	„ 14	1·10
„ 16	1·08	1·45	0·37	„ 13	1·24	1·45	0·21	July 2	1·30	„ 16	1·14
bis 16	0·97	1·41	0·44	„ 18	1·00	1·25	0·24	„ 26	1·01	Oct. 7	1·33
„ 17	1·03	1·51	0·48	April 3	1·06	1·53	0·27	„ 30	1·10	„ 14	1·16
								Aug. 1	1·09	„ 17	1·20
	10·39	5·05	4·46		11·03	13·70	2·66		12·05		13·70
	1·03	1·50	0·45		1·10	1·37	0·26		1·07		1·14

The difference between thermometers M and N increases to a slight amount, indicating that the zero of M rose more rapidly than that of N. The difference between M and O diminishes, as does that between N and O, both circumstances indicating that the zero of O rose more rapidly than that of either of the others. As, however, the greatest variation in the relative zero correction is but $0^{\circ}\cdot45 - 0^{\circ}\cdot26 = 0^{\circ}\cdot19$, which is insignificant compared with uncertainty arising from the difference of pressure, the same uniform rate of increase has been allowed for all, and the true boiling point for each observation is obtained by applying the correction

$$(1^{\circ}\cdot37 + 0^{\circ}\cdot054, n.)$$

to the observed boiling point, after correcting N and O to the standard, by applying the mean differences of M — O, for each

of the periods in the above table; n is the interval in months from the 26th July, 1843.

TABLE IV.

Observations of the Boiling Point made at Barometric Stations.

DATE.	STATION.	Temp. of Air.	Boiling Point.		Elevation.		Bar.	Bar.	WEATHER.
			Obs.	Corr.	Obs.	Corr.	Corr.	Elev.	
					Feet.	Feet.		Feet.	
1843.		°	°	°			°		
June 2	Mountain Portage, the lower end	42	212.41	211.04	488	496	29.161	851	Raining.
" 3	Large Flagstones	54	211.51	210.14	945	985	28.807	993	Clear and fine.
" 5	Jordan's Post.	47	211.29	209.92	930	1016	28.628	1115	Fine.
" "	Prairie Portage	55	211.29	209.92	980	1027	28.390	1361	Fine.
" 6	Savannah Portage	57	211.48	210.11	965	1015	28.501	1402	High W.N.W. wind. Unsettled.
" 13	L. la Plaine	52	211.38	210.01	1016	1059	28.602	1049	Unsettled and stormy.
" 15	Ditto at Fort Frances	59	211.51	210.14	950	1004	28.657	1230	Decidedly wet.

The Mountain Portage is the first arrived at after leaving Lake Superior. The barometric elevation deduced for it, which is 224 feet above that of Lake Superior, is probably too great, but that deduced from the temperature of boiling water is probably 150 or 200 feet too little. The thermometer was not supported above the bottom of the vessel until the observation at the Savannah Portage.

The next Table V. contains the observations made with three thermometers, boiled at the same time in a vessel arranged to contain them. The series commences at York Factory, where I obtained the thermometer marked O by the favour of Mr. Hargrave, the gentleman in charge of that establishment. For the other, marked N, I was indebted to Mr. D. Ross, the gentleman in charge of the establishment at Norway House. Both instruments, as has been stated above, were sent out by the Geographical Society, to be used by the officers of the Hudson's Bay Company in their extensive journeys over the interior of the North American continent.

TABLE V.

DATE.	STATION.	Air.	Therms. Observed.			Therms. Observed.			Mean.	Elevation.		WEATHER.
			M.	N.	O.	M.	N.	O.		Obs.	Cor.	
1843.												
July 25	York Factory	50	213-23	212-05	211-65				211-31	352	378	Fine; a brilliant aurora.
" 26	"	50	213-51	212-36	211-79				211-23	403	433	Wet, dull.
Aug. 5	Painted Stone	65	212-66	211-60	211-25				210-66	682	708	Dull, unsettled.
" 13	L. Winnipeg	67	212-61	211-57	211-16				209-92	1005	1057	Continued wet.
" 24	Cumberland House	58	212-06	211-10	210-56				210-00	1021	1102	Fresh S. Easterly; fine, but variable.
" 29	Frog Portage	58	211-18	210-28	210-04				209-88	1081	1121	Very fine.
" 30	"	70	211-98	211-03	..				209-35	1352	1425	Dull, wind and rain.
Sept. 9	Lake à la Crosse	50	211-32	210-33	209-82				208-71	1647	1702	Dull, showery.
" 13	Buffaloe	58	210-83	209-68	209-36				210-31	861	868	Improved.
" 16	Methy Portage	48	210-17	209-09	208-72				210-53	749	749	Set, fine.
" 17	S. end	36	211-72	210-75	210-31				211-02	498	511	Clear and fine.
" 17	N. end	32	211-99	210-96	210-48				211-27	372	364	Overcast, easterly wind.
Oct. 2	Ditto	43	212-54	211-40	211-03				211-49	260	217	Clear and fine.
Oct. 2	Athabasca	23	212-87	211-66	211-44				210-85	586	555	High wind, W.N.W.
Nov. 1	"	12	213-00	211-96	211-77							
Nov. 10	"	8	212-41	211-36	211-12							
Dec. 2	"	-1	213-51	212-48	212-09							
1844.												
Jan. 4	"	5	212-96	211-89	211-60				211-88	*60	*54	Slight snow.
Feb. 2	"	-10	213-57	212-38	212-14				211-26	377	353	Wind light, N. by E.; overcast.
Mar. 4	"	69	212-59	211-29	..				211-76	*122	105	Fine, S.W. wind.
July 2	"								210-56	733	789	{ or 371 ft., if the observations marked thus * are included.
									471	468		

TABLE V.—continued.

[illegible]

Aug. 12	Fort Assinboine . . .	54	210.24	209.03	..	208.19	208.13	..	208.16	1921	2009	Fine, followed by much rain.
" 14	Pembina River . . .	55	209.77	208.52	..	207.72	207.62	..	207.67	2216	2322	Dull and unsettled.
" 19	Edmonton . . .	65	210.73	209.57	..	208.67	208.66	..	208.66	1716	1834	Wind, light W.; unsettled.
" *13	Lake Winnipeg . . .	67	212.61	211.57	..	211.21	211.23	..	} 211.22	403	433	Wet, dull.
1844.	(See above)	..	0=	211.10	..	0=	211.23	..		886	923	High N.W. wind; dull, following continued wet.
Sept. 12	"	52	212.34	211.26	..	210.23	210.30	..	210.26	840	865	Moderate S.E.; changeable, but improving.
" 14	"	58	212.43	211.33	..	210.32	210.37	..	210.35	825	870	High S., very fine.
" 16	"	62	212.49	211.35	..	210.38	210.39	..	210.38	773	1015	High W.N.W.; unsettled.
1843.	Savannah Port . . .	57	211.48	..	..	210.11	..	..	210.11	1378	1359	Fine, calm, and unclouded.
June 6	"	26	211.50	210.17	..	209.34	209.26	..	209.30	1402	1259	Wind S.; fine but overcast.
1844.	"	..	..	..	..	..	..	..	..	457	496	Wind W., fresh, and snowing.
Oct. 7	By barometer . . .	..	..	..	..	..	..	..	..	576		
June 6	"	46	212.90	211.74	..	210.74	210.73	..	210.74			
Oct. 14	L. Superior . . .	32	213.43	212.23	..	211.27	211.22	..	211.25			
" 17	"				..			..

The foregoing observations assign to Lake Winnipeg an elevation of 700 feet above the ocean, if we include with those of 1844 a single day's observation in 1843, but if that observation is omitted, an elevation of 886 feet. The Painted Stone Portage is at the head of a sluggish stream falling into that lake, and at the summit of a secondary ridge, or height of land, which divides the minor streams falling into Lake Winnipeg from those which fall directly into Hudson's Bay. Its elevation, then, must be somewhat greater than that of the lake, and the value deduced from the single observation made there, from 400 to 500 feet too low. The elevation of the Saskatchewan at Cumberland House, by the mean of two observations, is 905 feet, which is quite accordant with the observations on Lake Winnipeg, and supports the general conclusion that the elevation of the latter is about 800 feet.

The next important point is the Frog Portage. The bed of the Churchill or English River at this place is much higher than that of the parallel bed of the Saskatchewan, and in seasons of high water it discharges a part of its redundant burden into the chain of small lakes which communicates with the latter river. The observation makes it 97 feet above Cumberland House, taking for the latter the mean of two observations there. It is probable, from the state of the weather at the time of observation, that the barometric pressure was below the mean; it was extremely wet, mists and decided rain alternately for several days.

The observations at Isle à la Crosse and Buffalo Lake, which latter is very little above the former, assign an elevation of from 1200 to 1300 feet to that part of the bed of the English River. We then come to the celebrated Methy Portage, or Portage de la Loche, at which the traveller first reaches the streams which flow into the Northern Ocean, and which forms the northernmost portion of the great dividing ridges of the continent. Lieut. Hood, in Sir John Franklin's Journal, vol. i. p. 190, calculated the elevation of the hills of the northern end of this portage to be 2467 feet above the ocean, allowing 1 foot per mile to the course of the rivers, and 6 feet to each fall or rapid. The observations made on the spot, those at Isle à la Crosse, and those, to be noticed hereafter, made towards the head of the Athabasca River, concur in giving a considerably less elevation to this region. The elevation of the S. end of the portage, by observation, is 1702 feet; it appears probable that it is rather above than below the truth, from the state of the weather at the time, which was such as is usually accompanied by a barometer below the mean. The land, although generally of a level character, appears to rise towards the other end; if we allow 150 feet for this rise, we have an elevation at the hills at the northern end of 1852 feet. Two observations give a mean elevation of 808 feet to the Clearwater River

at their foot, thus making their elevation above the Clearwater valley 1044 feet.

Lieut. Hood estimates their height at 900 feet. Sir Alexander McKenzie (p. xxxvi) remarks that "the precipice at the N. end rises upwards of 1000 feet above the plain beneath;" but if the observation at the S. end gives an elevation above the truth, it appears equally probable, from the very decided improvement in the weather which took place on the 17th of September, that the second observation at the foot of the hills was under circumstances of barometric pressure above the mean, and gives too low an elevation. If, then, we add 150 feet to the first observation for the gradual rise in a distance of 12 miles, and add 950 feet to each of the observations at the foot of the hills, the whole give a mean elevation of 1790 feet to the hills at the northern end, which I believe to be near the truth.

We next come to Lake Athabasca. The boiling point of water was observed here once a month for eight months. It should have been observed at least once a week, and probably a daily observation would have abundantly repaid the time devoted to it; but the writer never having at that time entered into the details of any extensive series of observations of this nature, or met with any instructions on the subject, was not duly impressed with this truth, and would frankly acknowledge his oversight in this place for the benefit of any future travellers who may be placed in the same circumstances. It appears from Table I. that the mean of 21 observations at Toronto, made under a great variety of atmospheric circumstances, and differing (between the extremes) $2^{\circ} \cdot 57$ in the boiling points observed, is $18'$ too high, being $213^{\circ} \cdot 68$ instead of $213^{\circ} \cdot 50$, by thermometer M, which latter is the true mean corresponding to the mean pressure. The barometric range in these observations, as remarked above, was $1 \cdot 3$ inches, and it is probable that at least an equal number of observations will be generally requisite, in the winter season in countries without the tropics, to determine the elevation of a region with any approach to precision. Referring to the eight months' observations recorded at Athabasca, it appears that they give a mean elevation of 371 feet to that lake, or, if we reject two results most palpably below the truth, of 468 feet. The latter value indicating a fall of 340 feet in the beds of the Clearwater and Athabasca Rivers from the foot of the Portage de la Loche, appears to be greater than the distance and nature of the current renders probable; although the numerous rapids and falls on the Clearwater River indicate a rapid declivity, while it is also less than the distance of Lake Athabasca from the ocean, and the rapidity of the current in the Slave and Mackenzie's Rivers. Lake Athabasca, to the course of its discharging waters,

is about 1400 miles distant from the Northern Ocean, and the writer considers this elevation, as well as that for Great Slave Lake, to be considerably under the truth.

The four observations at Fort Simpson, on Mackenzie's River, are too irregular to warrant any conclusion from them.

The next series of observations was made in the elevated region at the base of the Rocky Mountains, between Peace River and the Saskatchewan, a district remarkable for its gradual and regular ascent, preserving throughout, much of the character of a plain country. From Lake Athabasca to Dunvegan, a distance of about 650 miles, there occurs but one inconsiderable fall and a few rapids; the bed of the Peace River preserves nearly a uniform inclination, in which it rises, by the observations here given, 310 feet (778—468 feet). The stream is, however, more rapid above Fort Vermilion than below it. The depth of the bed of the stream below the surrounding country increases with great uniformity as we ascend the river. A defile, very similar to that called the Ramparts on Mackenzie's River, but on a finer scale and with far more picturesque features, occurs about 8 miles above the River Cadotte, in long. 117° , and here the river has cut a passage through cliffs of alternating sandstone and limestone to the bed of shale, through which it flows at a depth of 200 feet (by estimation) below their summit. The general elevation of the country, however, still continues to increase, and at Dunvegan it is 600 feet above the bed of the stream; yet even at this point, except on approaching the deep gorges through which the tributaries of Peace River join its waters, there is little indication of an elevated country; the Rocky Mountains are not visible, and no range of hills meets the eye.

A rough trigonometrical measurement gave 538 feet as the elevation of the Gros Cap, a bold hill behind Fort Dunvegan, above the bed of the river. The ground was estimated to rise behind the Gros Cap, by a gradual ascent, about 100 feet, until it attains the general level. The observation of the boiling point at Dunvegan, compared with that taken four days later on the route to Lesser Slave Lake, shows a difference of level of 575 feet; but both these observations are considered as giving an absolute elevation below its probable amount. The Lac Puant or Stinking Lake has no communication with Lesser Slave Lake, and must be very nearly on the same level; their distance apart is but 35 miles of level country; it is, therefore, included in a group with the latter, and the observations give an elevation of 1838 feet to this region. The observation on the 30th of July was made on the plains half a day W. of the Rivière qui Barre, and as it is uncertain whether the difference of the boiling point is due to difference of atmospheric circumstances or to difference of level, it is

not included with them. The nature of the rise from Lesser Slave Lake to Fort Assiniboine can hardly perhaps be inferred from the great velocity of the current in the Assiniboine River which prevailed at the time of the writer's ascent, the waters being then swollen several feet above their ordinary level; yet it must be considerable, and it is probable that the difference of 171 feet, shown by comparing the mean of the last group with the observation at the fort, is not much in excess. The elevation given for the line of country from thence to Edmonton is about 2055 feet. This value has to be viewed in relation to the elevation of Lakes Winnipeg and Athabasca, into which the rivers on the opposite side of the district flow, and if we allow that the elevation of Lake Athabasca, 468 feet, is too low, and that that of the Clearwater River is more nearly correct, it is consistent with the other determinations. The rapidity of the bed of the Assiniboine above the point at which the Clearwater enters it, is known to be extremely great, while it is at the same time so much interrupted by falls and rapids as to be scarcely navigable; the data require a fall of 1200 feet in a course of about 500 miles, which is less in proportion than that of Nelson River from Lake Winnipeg to the sea, if the elevation of 850 feet assigned to that lake be not too great. The observation at the Savannah Portage, in 1844, gives an elevation 244 feet greater than that found in 1843, and more nearly approaching the barometric difference of level. The mean of the whole is 1259 feet for this height of land, which, taken in connexion with the barometric elevations found for stations on either side, appears to be too low.

Reviewing the whole body of observations, and taking all the stations as mutually checking each other, through the known relations of elevation indicated by the course of the rivers, I should assign, from their general testimony, the following elevations for the principal points embraced in the series.

	Elevation.	
	Observed.	Assigned.
The Savannah Portage, or height of land between Lake Superior and Lake Winnipeg	1259	1450
The Lake la Pluie	1160	1160
Lake Winnipeg	773	853
The Frog Portage	1057	1100
Lake of Isle à la Crosse	1273	1300
The S. end of the Portage de la Loche	1702	1540
The N. end of	—	1790
The foot of the hills at	808	840
Lake Athabasca	371	600
Great Slave Lake	315	500
Lesser Slave Lake	1838	1800

	Elevation.	
	Observed.	Assigned.
The country about Edmonton on the Saskatchewan	1834	1800
The country about Fort Assiniboine	2009	2000
" " Dunvegan or Peace River	1416	1600
The bed of Peace River at Dunvegan	778	900

It appears impossible, without some such generalization as the foregoing, to turn a series of observations, liable individually to such large errors, to the best account. Neither can it so well be made as by one possessed of the local knowledge acquired by visiting all the localities, and so far furnished with means of estimating the relative weight of the observations made on them. On this view the above observations are provisionally given. It may be hoped that they will be examined hereafter by other travellers, or by the gentlemen of the Hudson's Bay Company whenever they are provided with the necessary instrumental means. It will be remarked that the difference of elevation between Isle à la Crosse and the S. end of the Methy Portage, which, as observed, is 429 feet, is given as 240 feet; but it cannot be doubted that even this latter is too great a difference. It is not likely that the six portages and the rapids in River la Loche, a distance of about 30 miles, cover a difference of so large an amount; but as each value stands connected with others, and is independently supported by them, the discrepancy is left to be reconciled by future observations.

XVI.—*Note on the N.W. Coast of Borneo, from Pulo Laboan to the Entrance of Malulū Bay.* Transmitted to the Royal Geographical Society by W. S. HARVEY, Esq., H.M.S. Agincourt.

PULO LABOAN does not appear to have the coal which was said to exist there; not more than a plateful being scraped up in half an hour. A bed of very fine coal 12 or 13 feet in thickness was found near the mouth of the Bruné River. It has been tried, and pronounced to be well adapted for steamers. The bed is not more than 10 miles from the harbour of Laboan. This harbour is excellent, admitting large ships to lie close in to the shore, and affords a perfect shelter in the N.E. monsoon; the soil is good and the climate healthy: the average height of the thermometer being 74° at noon. This island belongs to Great Britain.

Off Tanjong Kalias is Pulo Tiga,* a rock and two shoals (which are not laid down in the charts); they shoal very fast, and are extremely dangerous, being composed of great fields of coral; it is possible that the passage between Tangong Kalias and Pulo Tiga is the best and freest from danger.

Beyond Kalias are the rivers Bundu, Qualla, Lama, Pangow-an, Kimanis, Binom, and Papar; then nearly due north lies the islet of Liang-Liangan; then follow the rivers Pang-a-lat, Kow-ang, Kin-a-rut, Dumpil, Putatan, Api-Api, Inannam (within Gaya), Mengatal, Mengabong (Mangaloom?), Tow-a-ran, Sulaman, Ambong (town and bay), and Abia (Abni?); these are all very small rivers, shallow at the entrance, except Ambong, which is situated in a deep bay. All these have small communities of Malays or Borneans, located either at their entrance or a small way up. A larger population of Dusuns, or villagers, reside on the different ranges of mountains as far as the river Papar; here the Bruné people give place to Bajows, who are, however, common to the whole Archipelago. Their original habitat is unknown.

At the village of Kalias, on the river Bundu, are a few descendants of the original Chinese settlers of the city of Bruné. These people had a high opinion of the Dusuns, representing them as quiet, unwarlike, and industrious.

Kimanis is a small fresh-water stream; a sweet rural village adorns its banks at about 3 miles from the sea, surrounded with the lovely foliage of the cocoa-nut, pinangs, &c.; these, with the range of mountains in the background, form a picture of great beauty.

Mengabong lies between Tanjong Kaeton and Tanjong Dalliel; the entrance is shoal, and within expands into a number of lagoons, which are all overspread with mangrove; the left hand branch leads to the village, which is scattered and uninteresting. The population of Bajows is numerous, and the Brang Keyak, or great man of the place, stated that the Dusuns were in great numbers.

The exports of the country, consisting of rice, camphor, birds' nests, and cotton, are plentiful. Provisions, such as goats, bullocks, and fowls, can be had in abundance, if a vessel can wait a day or two for them. The soil appears capable of raising any species of vegetable, and the hills and mountains, from the variety of elevation which they present, afford every likelihood that coffee and spices would equally succeed.

Tampasuk: river, shoal; surf on bar. About a mile up the river is the town, and a little above it excellent fresh water can

* Teega Isles of the Admiralty Chart.—Ed.

be obtained. It was very superior to any of the Malay towns hitherto fallen in with; the houses larger and better built, and an attention to comfort, situation, and appearance, which showed a certain degree of advancement in civilization. It was a notorious nest of pirates. Next to Tampasuk is Pandassan, another piratical community.

The scenery along the entire coast from Pulo Laboan to the extreme of Malulū* Bay is very beautiful. Kina Balu forms a grand and striking feature in the picture, lifting its head far above all its neighbours; at 95 miles it gave an angle of 65'.† It may be remarked that Kiná is the Bruné method of pronouncing China; Kina Balu being a Chinese harbour, Kina Bana, country of China, and in the island of Laboan, Kina Bintangan on the N.E. coast. There are many other similar names, which prove how long since the Chinese were located on the shores of Borneo.

The people about Bruné and the Dusuns are shy at first, but subsequently civil and obliging.

XVII.—*Notes on Part of the West Coast of Borneo—109° to 117° E. long.* By Capt. C. D. BETHUNE, R.N.

THAT part of the coast of Borneo which I have had an opportunity of partially visiting extends from Tanjong Dátu, in lat. 2° N. long. 109° E., to Malludu Bay, in lat. 7° N. and long. 117° E., a distance of about 600 miles in a N.E. by E. direction.

The general aspect of the country from Dátu to Sádóng, an extent of about 100 miles (including the district of Saráwak), is mountainous. From Sádóng to Báram, about 250 miles, it is flat, and thence to the northern extremity at Malludu mountainous. From Tanjong Dátu a range of mountains extends inland to the eastward. The range appears to separate the waters of the N.W. coast from those of Pontianak. The highest mountain of this range does not probably exceed 3000 feet. A range near Brúné, N. of Báram, runs about N. and S., and may probably reach an altitude of 5000 feet. This range has not such an abrupt character as that to the southward. The N. part of the island is decidedly mountainous. The principal mountain, Kina Balu, is at least 13,000 feet high.

The surface of the country is undulating, the soil in many parts

* Maloodoo of the maps.—Ed.

† It is seen at a distance of 40 leagues.—Ed.

very rich and deep, and the whole well wooded. In the southern division, mentioned above, the wood clothes the hills close down to the sea; the middle divisions abound in mangroves; while the northern division presents a picturesque appearance owing to the many patches clear of wood. The whole coast is well watered by numerous rivers. The principal among these give their names to the districts. Commencing at Dátu we first come to—

Ländu.—Second or third class river; one mouth; barred; about 2 fathoms at high water; bed, mud; only navigable for boats; current not rapid; not thickly inhabited; affluents few and insignificant.

Saráwak.—First class; at least twelve mouths; two of these navigable; Moratábas, and Bátu-buóya or Sántobong, both barred; $2\frac{1}{2}$ and 3 fathoms at low water; navigable for 15 feet at least 20 miles; tide reaches 35 miles from sea; current at spring-tides 3 or 4 miles; no bore; moderate rapids 45 miles from sea; occasional freshes 20 feet higher than ordinary tide. Bed near the sea, mud; higher up, gravel and pebbles; brings down much soil. About 30 miles from sea divides into two branches; tributaries few and insignificant; populous.

Samarahán.—Second class; communicates with Saráwak by Riám; one mouth; barred; navigable for small craft; tide reaches 40 miles; current 4 or 5 miles. This river is Mr. Brooke's eastern boundary.

Sádong.—One mouth 1 or 2 miles wide; barred; tide reaches 30 or 40 miles; bore 7 miles from mouth; several affluents; not well known. Sabárgan, Sangái, Simungáu. From a point two or three days up this river (25 miles?), a land journey of half a day reaches a tributary of the Pontianak at a place called Balái Karárgan.

Sibúyan.—Third class; small; little known.

Bátang Lúpar.—First class; tributaries, Linga, Sakárran. The following is extracted from the 'Singapúr Free Press,' 12th September, 1844, describing the operations of the Dido:—"The Báng Lúpar is a noble stream, about 2 miles wide at the entrance; for 20 miles it is deep and free from danger, and at that distance from the entrance on the right hand is the considerable river of Linga. From the Linga to Putusán is about 20 miles farther: the river is shoal, and obstructed by sand-banks; the tide rapid; and, at the springs, a heavy bore runs in, which is dangerous for boats. From Putusán to the small and rapid river of Undup is from 15 to 20 miles farther; and, 5 miles beyond, is the town of Sakárran, situated at the junction of the Báng Lúpar and the Sakárran, which runs to the left, and is navigable for boats for 40 miles. It is a narrow but pleasant stream, with banks well cultivated, or planted with fruit-trees. The Báng Lúpar is also

well cleared of brushwood, and its banks inhabited by Dayáks. The Undup is a small stream: about 5 miles from its entrance stands a town of the same name. Beyond Undup the stream becomes narrow; its banks are wooded and uninhabited for 25 miles."

Seribas.—Unfortunately my notes on this river are lost. An account of it will probably be found in Captain Keppell's report of the operations of the *Dido*.

Kalaka.—Second class; little known; low muddy banks; not populous.

Niyabor.—Second or third class; little known.

Rejang.—First class; low banks for 30 miles, where it is joined by the *Serikai*, on which stands a large town of the same name.

Pálo.—First class; barred.

Pelobahan, Mátu, Igáu, Oíga, Múka.—These five are second or third class; little known. *Oíga* and *Múka* produce a great deal of sago. The rivers from *Rejang* to *Múka* inclusive are believed to communicate in the interior, forming the delta of *Sirik*.

Bintulu.—Second or third class; barred; little known; rich in produce; camphor, nests, &c.

Tatán.—Unknown; inhospitable people.

Méri.—Third class; little known; small population.

Báram.—Third class; barred; little known; interior populous and rich in produce; can be ascended fourteen days' journey. (140?)

Béra, Beláhit, Kadáyan, Tútong.—All small and little known.

Brúné.—First class. North of *Brúné*, I know little or nothing more than has been published by Dalrymple, &c. There is said to be a lake near *Kína Balú*, the nearest point to which is *Abái*.

The rivers at the head of *Malludu Bay* are third class; barred; not populous.

Bangkóka.—Third class; barred; not populous.

Political Divisions—Population, &c.

The whole coast from *Tanjong Dátu* to the Bay of *Sandáhan* on the east side is nominally subject to the Sultán of *Brúné* (Borneo* Proper). In this view I exclude any right we may have to that part extending N. from *Kimánis*. His authority, however, is only recognised from *Dátu* to *Kimánis*, and his hold over some part of this is but slight. The northern part is partially occupied by squatters, a mixture of Arab, Malay, Illanun, and Julak, who have settled under various chiefs wherever they found a convenient

* Borneo is called *Bórni* by the Malays.—F. S.

spot. These people are of a more warlike disposition than their neighbours to the south, and their chief support is piracy.

The present royal family are derived from the marriage of a Chinese (?) princess with an Arab sheriff, whose descendants intermarried with the royal family of Johór. The Sultán of Singapur* acknowledges the relationship. I annex a genealogical table, which shows that the Rájah Múda Hassim, who has been supported by Mr. Brooke, is the rightful heir to the throne, and that Pangeran Yúsuf [Joseph] is illegitimate.

The Malay population is settled on the principal rivers; each river or district is governed by a dátú or chief, and occasional visits are made by the Sultán's officers to collect revenue. The dátú is chiefly occupied in getting as much as he can out of his people and the Dayáks; but the arrival of the collector is the signal for fresh extortion. But little of the proceeds finds its way into the Sultán's treasury.

Formerly there was a numerous Chinese population, settled on the N.W. coast, particularly in the neighbourhood of Brúné, and a considerable trade was carried on between China and Borneo, the latter producing many articles in great request in the former—ironwood, camphor, birds'-nests, &c. &c.; but the exactions and ill treatment of the Borneans proved unbearable, and the numbers gradually decreased. For the last thirty years the country has been deserted by the Chinese, with the exception of some few individuals. They come principally from the neighbourhood of Amoi. It is to be expected that after a few years of tranquillity they may be tempted to return; their agricultural knowledge and industrious habits render them very valuable settlers. The only Chinese colony at present existing is at Saráwak. It has not been established for more than three or four years—since Mr. Brooke occupied the place. They perhaps amount to 400 or 500, and are chiefly employed as gold-washers. Mr. Brooke originally gave them a certain capital in advance, which they repay gradually. They work together as one body, electing three head men to manage their affairs, and each being paid according to his work. There are about thirty or forty established at the village of Saráwak, chiefly mechanics and agriculturists.

The indigenous population is included under the names of

Dayák	Kadáyan	Milanau
Káyan	Murút	Dusúr

The Dayák.—Although Dayáks are said to be found on the N.E. part of Borneo, the only information we have about their race relates to the tribes inhabiting a space bounded by a line from the river Seribas inland, about 150 miles thence, to and down the Pontianak or Kapús river, to the sea. Agriculture is their

* Sing-hu-pura, Lion-town; a Sanskrit name.—F. S.

principal pursuit, though many have acquired from the Malays predatory habits, and either make piratical excursions at sea, or attack and plunder the tribes in their neighbourhood. Such were the Seribas and Sakarran Dayáks attacked by the Dido. Their language is a branch of what Marsden and Craufurd call the Polynesian: they have different dialects, but understand each other. Many know nothing of the Malay (*see Vocabulary*). They have a notion of a Supreme Being, and there is some trace of Hindú worship in their religious ceremonies. The Dayák is not tattooed. His arms are a short sword (*paráng*), with which he also performs all his agricultural labours: he does not use the sumpitán or blow-pipe. I have visited several villages subject to Mr. Brooke: the people appear innocent and inoffensive, owing to their long dependance on the Malays, who, by occupying the mouths of the rivers, keep a tight hand over them: they have an humble and submissive air. One virtue they possess which I have rarely witnessed among untutored nations—that of honesty. They inhabit large buildings, which contain the whole tribe. Their apartments are separate; but there is a gallery common to all, where much of the in-door labour is carried on. The unmarried men and boys sleep in this gallery apart from their families. They marry young, have one wife, and appear very fond of their children; their families are not large, and many children are said to die young. They have been living in tranquillity for so short a period that correct information on this point cannot yet be obtained. The dress of the men is of the simplest kind: a narrow cloth wrapped round the loins passes between the legs, and hangs down before and behind; a shorter cloth is wound round the head; a sword, knife, and betel-box complete the man's accoutrements. The women wear a cloth folded round the waist, and descending to the knees. Both men and women ornament their legs and arms with many rings of brass wire, shells, &c. A taste for more clothing already is creeping in, and the Malay *bájú* and *sárong* are often seen.

During the months of September, October, and November, they are occupied with their farms: the brushwood is cut down and burnt, and then the seed, Indian corn and rice, dibbled in. It is reaped about February. During the farming operations the family generally reside on the spot, returning to the village with the produce. The moment the crop is off the ground a grass called *láláng* (*Andropogon?*), most difficult to eradicate, springs up. The natives do not attempt this, but leave it to be destroyed by the overgrowing brushwood; so that a spot, after producing a crop, is not touched again for seven years.

They are fond of dancing, and a dance always forms part of a ceremonial reception; both men and women join in it. On the whole, I have seldom seen a more interesting race; and I think they show great capacity for improvement.

The *Káyan* is the most numerous tribe. They inhabit the rivers in the interior, from Rejang to Báram, and indeed are supposed to exist throughout the island of Borneo, except towards its north end. Their dialect is different from the Dayák. They are warlike, perfectly independent, tattooed during war, and wear fantastic dresses, with shields. Arms—a short sword (*ilang*), and the *sumpitán*, a blow-pipe, which can propel by means of the breath a dart to the distance of 40 yards. The dart is poisoned, but has been proved to be a harmless weapon. Their religion is not known. They may be met with generally at Serikaí.

The *Kadáyan* inhabit the neighbourhood of Brúné; a quiet inoffensive people; chiefly Mohammedans.

The *Milánau* inhabit the mouths of the Sirik and Báram rivers; quiet, hardworking people.

The *Murút*.—Hill tribes of the interior of Brúné; much oppressed by the Káyans; little known; use the *sumpitán*.

The *Dusúr* inhabit the northern parts of Borneo; a quiet inoffensive people, who do not use the *sumpitán*.

Commerce, &c.

The natives appear to have a great disposition to trade, and I think a beneficial commerce might be carried on were the coast protected by a settled government. Hitherto the exactions of the chiefs have been so great as almost to put a stop to all intercourse. Nothing can be done unless large presents are given to the leading men, and they are allowed to select and purchase goods at almost their own price.

The present rulers of Brúné are desirous of introducing a new system, and establishing a fixed duty. However, the country has been disorganized for so long a period, that no extensive commerce can be for a considerable time carried on.

As an instance of the increase of trade likely to arise from the people having confidence in the ruling powers, I may mention that, after Mr. Brooke settled at Saráwak, while the Rájah and his followers still remained there, the number of trading-boats amounted to about a dozen yearly. During the six months which followed the date of their removal to Brúné, the number increased to more than eighty. One had a cargo valued at 1000*l.*, the greater part of which was disposed of. In addition to this, Mr. Brooke's schooner, which makes monthly voyages to Singapur, is earning a steadily increasing freight on goods shipped on account of native traders.

I annex a tabular view of the trade between Singapur and Borneo for the years 1843 and 1844, which will show the articles required and produced. A comparative statement of the trade for the last fourteen years between Singapur and Borneo and the other eastern islands is also added. As the returns depend on voluntary statements, they must be received with caution.

The currency at Brúné is brass guns, pieces of nankin, and scrap iron; dollars and rupees are, however, known and valued.

1 pikul of guns = 30 dollars; 4 pieces of nankin = 1 dollar; 20 pieces of iron = $\frac{1}{2}$ dollar.

The above is about an average rate. The value of guns increases in a higher ratio than their size.

The Currency at Saráwak.—12 fanams = 1 Java rupee; 24 fanams = 1 real; 30 fanams = 1 dollar.

The measures are—

Gold Measure.—12 ságs = 1 amás; 16 amás = 1 bunkal; = 1 tál; = 832 grains.

Grain Measure.—8 gantangs = 1 paso; 20 gantangs = 1 pikul; 40 pikuls = 1 kóyan.

The gantang measures about 220 cubic inches, or nearly one-tenth of an imperial bushel. The gantang above, used in selling, is rather smaller than that used in payment of tribute.

Singapore. 1843-44.

IMPORTS.	Dollars.	EXPORTS.	Dollars.
Antimony ore	16,266	Arms (muskets)	1,035
Bees'-wax	16,532	Brass ware	2,065
Bêche de mer	5,131	China crockery ware	5,347
Birds'-nests	41,630	Copper coin	21,838
Brass ware	728	Country crockery ware ...	1,826
Camphor (Carus)	21,558	Cotton twist	3,181
Copper coin	2,825	Gambir (Gatah gambir), a gum	2,257
Gold-dust	144,334	Gunpowder	1,252
Mats	9,339	Hardware	4,909
Maws (fish)	480	Iron and steel	7,796
Paddy	1,116	Lead	454
Pepper	12,559	Opium	85,048
Piece goods (Malay)	360	Oil	700
Rattans and canes	47,125	Piece goods (European and American)	52,104
Rice	4,335	Piece goods, India	43,360
Sago (raw)	13,069	" China {nankin 9,661 {silk .. 2,960	
Tortoiseshell	867	" Malay	13,021
Silver coin	6,411	" woollens	5,247
Woods garro	5,103	Rice	5,632
" lakha	578	Raw silk	6,940
		Salt	1,194
		Silver coin	11,450
		Tea	6,313
		Tobacco	6,372
		Wine, beer, and spirits ...	492

In addition to these, very small parcels of betel-nut, coffee, ebony, hides, indigo, oil, pulse, seaweed, spices, sugar—the amount of any one article not exceeding 200 dollars.

In addition to these, very small parcels of coffee, cotton-thread, cotton, European glass and earthenware, ivory, salt-petre, segars, sugar, stick-lac, and tin—the value of each under 200 dollars.

COMPARATIVE VIEW of the TRADE between SINGAPORE and the
EASTERN ISLANDS, 1830—1844.

		IMPORTS.		EXPORTS.	
		From Borneo.	From Islands.	To Borneo.	To Islands.
		Dollars.	Dollars.	Dollars.	Dollars.
1830-31	{Treasure .	118,895	33,469	15,650	8,706
	{Goods .	125,281	200,877	176,579	250,218
1831-32	{Treasure .	84,996	10,500	15,645	4,500
	{Goods .	124,671	163,417	162,371	163,216
1832-33	{Treasure .	109,675	45,245	21,711	8,010
	{Goods .	103,853	205,170	150,234	311,690
1833-34	{Treasure .	113,687	21,250	12,759	6,398
	{Goods .	158,704	204,325	248,218	217,275
1834-35	{Treasure .	109,294	43,039	17,033	8,444
	{Goods .	175,530	194,935	216,328	169,846
1835-36	{Treasure .	134,038	44,880	14,329	25,388
	{Goods .	233,394	269,423	283,266	304,775
1836-37	{Treasure .	150,026	10,510	22,225	8,604
	{Goods .	116,663	262,372	231,767	244,436
1837-38	{Treasure .	150,981	68,400	40,250	17,330
	{Goods .	138,075	241,784	253,315	300,093
1838-39	{Treasure .	126,720	75,170	12,598	22,404
	{Goods .	138,819	255,067	210,156	348,162
1839-40	{Treasure .	116,008	47,486	18,502	19,569
	{Goods .	138,430	320,898	241,419	336,925
1840-41	{Treasure .	78,119	31,282	16,838	51,516
	{Goods .	175,800	316,742	245,349	276,601
1841-42	{Treasure .	120,219	73,694	34,233	50,100
	{Goods .	131,690	253,858	284,715	299,224
1842-43	{Treasure .	135,000	8,650	37,903	23,823
	{Goods .	125,876	105,039	258,734	100,096
1843-44	{Treasure .	153,576	60,568	33,288	57,607
	{Goods .	205,965	266,832	274,865	399,422

The great falling off in the trade with the Islands in 1842-43 arose from an early change in the monsoon, which prevented nearly 200 of the Bugis boats, or nearly four-fifths of the whole number, from reaching Singapdr. They bore up for Surabaya, where they were received with unexpected favour by the Dutch, and were permitted to sell their goods free of duty. The trade, however, was resumed the next year.

Climate, &c.

The N.E. monsoon prevails on the coast from November to April, and the S.W. monsoon for the other six months. The months of November, December, and January, may perhaps be called the rainy season; but considerable quantities of rain usually occur about the change of each monsoon, the finest weather during the S.W. monsoon. I am, however, inclined to think there is no decidedly dry season. Land and sea breezes alternate near the shore. The nights are always cool. Lieutenant Elliot, Superintendent of the magnetical observatory at Singapur, has kindly furnished me with tables of the temperature and pressure, compiled during a short visit to Sarawak.* From them it appears that the temperature assimilates to that of Singapur, which, for India, is considered a temperate climate. The difference betwixt the reading of the thermometers at 11 A.M. may be explained by the fall of rain, a shower often making a difference of 10 degrees at each place.

I also submit the average monthly temperature of Sarawak, furnished for me by Mr. Roupell, a gentleman attached to Mr. Brooke.

There appears to be but little disease in the country. The resident Europeans, from occasional exposure in the woods, are sometimes affected with slight attacks of ague. The natives suffer principally from diseases of the eyes and skin, the latter arising probably from poor living.

Average Monthly Temperature. Sarawak.

	6 to 7 A.M.	Max.
January . . .	74.6	85.1
February . . .	76.0	86.0
March . . .	75.9	87.7
April . . .	75.9	87.0
May . . .	74.5	88.9
June . . .	75.4	88.2
July . . .	75.6	89.7
August . . .	74.4	90.8
September . . .	73.7	—
October . . .	73.8	87.0
November . . .	74.6	87.3
December . . .	75.3	86.3

* See Diagrams.

Dayák Vocabulary.

a, e, i, o, u, as Italian; *ä*, as *u* in *under*; *ü*, as French *eu*.

God	Joáta	Dead	Kabús
Fowl	Siók	Sick	Berändäm
Bird	Manúk	Bellyache	Nămăn táin
Man	Darí	Headache	Nămăn bák
Woman	Dairgóng	Wife	Saún
Infant	Anák péra	Husband	Banú
Child	Anák kaniá	Enemy	Tamí
Sun	Bat' ündú	Rice	Padé
World	Dunya (Ar)	Cooked rice	Brás
Farm	Umú'	Path	Arán
Head	Obák	I	Akú
Hair	Ubók	No	Dü
Ear	Kajít	Go to	A'di ka
Eye	Batü	Come here	Kawátidawü
Nose	Undóng	Go away (be off)	Bu
Mouth	Bakák	To bathe	Mamú
Teeth	Jipü	To request	Mité
Chin	Ráng	To give	Ni-én
Tongue	Jurá	To walk	Panú
Hand	Tang-án	One	Ni
Leg	Kájá	Two	Du-ü
Foot	Purá	Three	Tarú
Dog	Kasóng	Four	'Mpát
Deer	Payú	Five	Rimü
Wild hog	Pang-án	Six	'Nám
Water	Pi-in	Seven	Jo
Sea	Ráut	Eight	Mái
House	Ramin	Nine	Priyí
Mountain	Darúd	Ten	Simúng
Wood, thicket	Düräm tärún		

Genealogical Sketch.

'Omar 'Alí Sápudin, the first Sultán of whom we have any account, married and had issue Moḥammed Tázud-ud-dín* and Moḥammed Kanzu 'A'lām.† On the death of 'Omar his eldest son succeeded him. He married and had issue Jamálu-l 'A'lām. He had also two illegitimate sons, Yakób and Yusuf. Moḥammed Tázud-ud-din resigned the throne in favour of his son Jamálu-l, who married his cousin Núr 'Alām, and had issue Oma Ali, the present Sultán. On the death of Jamálu-l ('Omar 'Alí, his son, being, I suppose, young), Moḥammed Tázud-din resumed the sceptre, and at his death was succeeded by his brother, Moḥammed

* Tázud-dín, *i. e.* Diadem of the Faith.

† Kanzu 'Alām, *i. e.* Treasure of the World.

Kanzu 'Alām. This happened about 1795. Kanzu 'Alām had three wives, and had numerous children. About 1816 he was succeeded by his eldest son, called, from the brilliancy of his eye, Rājah A'pī (Fire). Rājah A'pī was succeeded, in 1820, by his cousin and nephew, 'Omar 'Alī Sapu-d-dīn, who now reigns: he has no issue.

The Rājah Múda Hassim is the heir presumptive; and the power of his illegitimate cousin, Yúsuf, being destroyed, his claim is undisputed.



XVIII.—*Journal of an Excursion from Singapur to Malacca and Pinang.* By J. R. LAGAN, Esq.

THE following notes were written in the course of a visit to Malacca and Pinang in March, 1845. After a residence of some years in the island of Pinang, the writer removed to the younger and more thriving settlement of Singapur; and having obtained a short period of leisure, after two years of unremitted labour there, he employed that interval in a visit to Malacca for professional purposes, extending his voyage to Pinang. These notes were principally written on the spur of the moment for the amusement of distant friends; and I have only made some slight additions to render them more intelligible to those who are not so familiar with the Straits as my "constant correspondents" in Scotland by this time probably are, in the belief that, though but skimmings from the surface, they may perhaps be found not to be wholly uninteresting to those who are desirous of becoming more familiarly acquainted with our settlements in the Eastern Archipelago.

Malacca, March 8th, 1845.—Yesterday I was in the midst of all the bustle of the Commercial Square at Singapur, and am now in perfect solitude on a little open bangalá on the sea-side, three miles from the quiet old town of Malacca. I left Singapur about 5 o'clock yesterday afternoon in the new steamer *Fire*

Queen, which has just begun to ply between Calcutta and the settlements on the Straits. Among my fellow-passengers there were two gentlemen from S. America; one of them, extensively concerned in the guano trade, had brought a quantity of guano from the islands near the S. American coast to China, thinking that it might be sold there advantageously; but the speculation seems not to have met with the expected success. The Chinese husbandmen, who never let anything be wasted which can serve as manure, had no great need of guano; and in the Straits of Singapur, or close upon their northern entrance, there are islands of our own which yield large supplies of a substance very serviceable, if less rich than the American guano. The other passenger to whom I alluded above was a captain from China, engaged in the opium traffic, who had much to tell of Hong Kong. There were also two other passengers, Dutch gentlemen from Batavia, who were indefatigable in examining charts, reading Newbold, and consulting the Pinang Almanac and Directory. One of the latter is a well-informed and zealous officer in the Dutch navy, the Baron Melville de Carabee, who has been engaged for the last ten years in scientific surveys of the Dutch islands, and is now on his way to Europe in order to publish large maps of all the eastern possessions of the Netherlands (*Neerlands Indie*), with a description of their volcanoes and mountains, the heights of which have been ascertained barometrically or trigonometrically. From him I learned that all the west coast of Sumatra, from Padang northwards, has been accurately surveyed; and that one of their medical men, who lately passed a whole year in the country of the Battas, is about to publish an account of what he saw, which from his talents is likely to be very valuable. We reached Malacca at 2½ P.M., having been above twenty-two hours steaming. On landing, I proceeded to the house of H—, a retired Chinese merchant, reputed to be the wealthiest man in the Straits, whose desire to consult me had occasioned my visit to Malacca. The Chinese houses here, at least the two or three I have been in, which are about the best in the place, struck me with admiration. They are unlike anything I have ever seen in the Straits, and bear a close resemblance to the representations of dwelling-houses in China which may be seen in books on that country. Koon Swee's house consists of two halls, from the ceilings of which are suspended many very beautiful and tasteful lamps of a peculiar kind. The walls are hung with pictures: some English, some Chinese, and a few French, the last not of the most chaste description. The second hall opens into a large court, of which the middle is depressed about a foot and a half below the level of the sides. Curious trees in pots are ranged in the centre. The private rooms open into an upper balcony, which overlooks the court.

At the further end of this court is the *Shêw-chú*,* or ancestral—say, rather, paternal—altar, for they are only their more immediate predecessors whom they hold in remembrance. A wide pair of folding-doors thrown open disclose a long inner court stretching down towards a clump of trees. All the doors being open, the current of air flowing over the tiled floors keeps the rooms deliciously cool. At 5 o'clock a splendid dinner was served up in a little snug room adjoining the outer hall of H——'s house, of which repast he, out of complaisance, partook, but in which Koon Swee was prevented, by a vow, from joining, having, on occasion of the sickness of some relative many years ago, sworn that if she recovered he would not eat on certain days, save of some simple fare, which the pigeon soup, laksa soup, stewed ducks, curries, &c., before us did not include. So, at least, he excused his abstinence; but the jolly countenance of my aldermanic friend bore so little of a fasting look, that I was inclined to think his chopsticks had already served their turn for that day. After dinner, H—— loaded one palankeen with my luggage, and brought me out here in another. He busied himself for about two hours in making everything comfortable; a couch, lamps, a goodly basket of champagne, sherry, beer, and eatables followed from Malacca. The place I occupy is a sort of bungalow, or rather *bálai*† open all round, about thirty feet square, having two small rooms in the landward corners. The sea dashes against the beach within twenty feet, and is fast sapping the roots of a row of very old senna-trees. It has already worked up to their trunks, and they cannot hold out much longer. The scene at night, when I was left alone, was peaceful and beautiful beyond anything I had seen for a long time. The air was still; the stars gleamed amongst the high leaves and branches of the senna-trees. The cocoa-nuts threw their dark shadows on the land behind, and the sea in front glimmered in the starlight. The next morning I was on foot by half-past five o'clock, and took a long walk along the road in the direction of Tenjong Kling. When clear of the cocoa-nut plantation in which the bungalow stands, I found myself amongst paddy-fields, stretching away, on the land side, into a plain of large size bounded by low jungle, and on the other side not broader than a field in England. Presently, the road turned towards the coast, and, as far as I proceeded, followed it, having only a row of senna-trees‡ separating it from the sandy beach. On the land side were clumps of cocoa-nut trees, sometimes running into each other, so as to form a

* *Shêw-chú*, i. e. the seat of the departed spirit.—F. S.

† *Bálai*, an open hall of audience like the African *Bentang*.—F. S.

‡ A species of *cassia* (F).

continuous screen; at other places broken, and showing the paddy-plains stretching inland. At short distances were doors opening through fences into Malay and Chinese huts. The latter proved to be shops; as daylight increased these were opened, and a few Malays took the road, carrying bundles of salt fish. The quietness of the road, the few houses, each separate, like a villa, from its neighbour, and the absence of crowds of children and fishing boats, sufficiently distinguished this scene from the coast of Wellesley Province, north of the Prye, which in other respects it somewhat resembles. I was delighted again to see plains of paddy in the ear. The greater part was already reaped. I struck off the main road, and proceeded about half a mile across the *bindang*.* Everything had a quiet indolent look: the very buffaloes were not to be disturbed by the intrusion of a stranger, and cropped the paddy-stalks and licked their calves without paying the slightest attention to my presence. The Wellesley Province buffaloes would have given a different and less agreeable reception to an *orang pútib†* who ventured to approach them. I walked till I perceived there was little more to be seen unless I prolonged my excursion beyond my walking powers. The *tout ensemble* is considerably inferior to the Mooda and Penaga districts of Wellesley Province. The paddy is stunted in comparison; instead of long lines of *permatangs,‡* covered with trees and full of inhabitants, there are only here and there a few scattered cocoa-nut trees, on the same level as the *bindangs*, with a solitary hut beside them. On all sides, too, the view is closed by jungle growing in the *sawah§* level, and everything indicates a state of extreme indolence, and an absence of all enterprise or persevering industry.

On my return, I found a cart had just arrived with a barrel of fine spring water from Búkit Chiná,|| on the other side of Malacca, for my ablutions. "Well!" thought I, "it is really worth while for once to be the guest of a wealthy Chinese." I had scarcely completed my toilet when my host made his appearance. I should have mentioned, however, that after I came in from my walk, my Singapúr friend K. paid me a visit. I strongly impressed on him the propriety of taking a young Malacca damsel to wife, when he had so good an opportunity; a piece of advice in which his uncle H—— afterwards heartily concurred. The immense disproportion of the sexes in Singapúr is one of its most remarkable, and, in its consequences, worst, characteristics. It is

* The little compartments into which the paddy plains are divided by embankments for the purpose of irrigation.

† White man: such is the generic term for Europeans and other fair races.

‡ Sandy ridges afterwards more particularly noticed.

§ Wet paddy-land.

|| China Hill.

principally owing to the preponderance of Chinese among the inhabitants, the scantiness of the Malayan population in the adjacent territories, and the habit to which so many of the Malacca-born Chinese, the first Asiatic merchants of Singapur, still adhere, of keeping their families at Malacca. So long as the Chinese husbands find it impossible to intermarry with the women of these countries, the permanent agricultural improvement of Singapur will remain impossible.

After dinner I strolled along the beach towards Malacca. I omitted to notice that I found the soil of the paddy-land to be a light-coloured clay, with ferruginous streaks, supporting a blackish mould of a few inches in thickness, which forms the bed of the paddy. This upper soil consists of the clay, thoroughly mingled and imbued with decayed vegetable matter, and enriched in some considerable degree, no doubt, by the droppings of the buffaloes. To what extent this mould may be the effect of cultivation I have not had an opportunity of judging. In my after-dinner stroll I found that the same soils were continued to the sea. The sea, in fact, is gradually eating into the soft clayey plain; the rocky line farther north, running out to Tanjong Kling, causes the encroachments of the sea to assume a crescent-shaped form. A narrow line of reddish sea-sand is thrown up against the freshly broken land, where the clay is exposed to the depth of about three feet. The black mould is, in some places, a foot and a half in depth. I also found some traces of black clay, a good deal resembling that of Singapur; but both the clays here are much less stiff, and do not seem to harden so much. I came to a sugar-cane field cultivated by Chinese; this cane has a strong, healthy, vigorous appearance, and, with its black mould in which it grew, told strongly against the Singapur plantations. I returned by the road, and, now that I could look more leisurely on the face of the country, its beauty pleased me very much. There are no hedge-rows, but, instead of them, rows of a curious tree which grows pretty tall, covered with a white bark which seems to be constantly in a state of exfoliation, and hangs round it like an old tattered garment: it has no large lateral branches, and the leaves are small and narrow. The cocoa-nuts here are very good: all that I have examined appear to grow out of the same soil as the paddy. I went into a small plantation which I was told belonged to Koon Swee. Some of the trees had at least 100 nuts on them. His people were busy carting sand from the sea-beach, and spreading it over the ground. I should mention that the soil of the paddy-fields on the Malacca side of Klaebang appeared to me to have a thicker bed of black mould than the tract which I examined on the other side. In comparing the Malacca plains with those of Wellesley Province, it is to be kept in

mind that the one coast is exposed to the swell of the Bay of Bengal, while the other is in the middle of a narrow sea 400 miles in length, and at Malacca not more, I suppose, than 50 in breadth. There is a little island at some distance in front covered with wood, the red (granitic) rock of which is visible at low water.

March 10th.—I have been sitting for half an hour on the roots of a senna-tree, now prostrate from the soil on which it grew having been washed away by the sea. This is the furthest tree of the row on the north side. It is merely united to the land by the extremities of the landward roots. The clay has been hollowed out below, but the grassy surface is still left. This too has disappeared in some places, and through the roots we look down on the bed of mud which they have helped to retain, and which is washed smooth by the sea. Although the lower part of the trunk is daily covered by the tide, and the greater part of the roots are also exposed to the salt water, the branches continue to put forth fresh leaves and flower-buds. The next tree is also undermined a little inside of the trunk, and is bent down over the sea. The other three in front of the bungalow still stand erect, but the sea is within a foot of their trunks. It was not, however, in examining this invasion of the sea that I was occupied, but in gazing on the line of coast stretching northward to Tanjong Kling, which is exquisitely beautiful. The sea is now smooth, with a gentle ripple. Flocks of white sea-birds skim along its surface or cover the fishing-stakes. A few boats are afloat. The margin of sand is surmounted by one unbroken but irregular wall of trees, among which the senna and cocoa-nut are easily distinguished. The long horn projecting out to Tanjong is opposite me; the morning sun is behind it, and that sweep of trees is bathed in light, and their outlines, as it were, distinctly defined by the white gleaming radiance in which they rest. The nearer portion of the coast is finely marked. The green rounded masses of the senna-trees, the smooth floor of sea-sand partly covered with their shadows, and the white gleam of the mirror-like sea, produce an exquisite effect. One group of senna-trees is particularly striking. A small stream flows into the sea close to me. On its northern side is a small paddy-field, with cocoa-nut trees and huts surrounding it on the land side. I picked up some masses of red granite on the beach, and the sand is evidently formed from this rock. I find on examining the ironstone that it is very different from the Singapur ferruginous clay; at least, the specimens here are so, and they are similar to those I observed as we entered, strewn about, marking the walls of the old fort. This rock has somewhat the appearance of a lump of clay from an ant's-hill, being full of chambers. It is quite hard: traces of the yellow-ochry matter,

with which these chambers have been filled, are visible. Although at some places in Singapur a similar appearance is assumed by that called laterite, it generally consists of sharp angular fragments, and, instead of being hard, it is of a crumbling nature. Between eight and nine o'clock I went into town: this was the first time I had seen the road by daylight. The first part, near Klaebang, I have already described. For some distance it preserves the same features—paddy-fields, clumps of trees, sea-views, inland rivers (?), &c.—road narrow, no hedges—a Chinese garden, with vegetables, sugar-cane, &c., occasionally. Presently, the cocoa-nut trees and houses, particularly on the side towards the sea, become more numerous, and at last continuous on both sides. There is much diversity in the construction of the houses (which are for the most part very neat), and in the appearance of the inmates. Hindoos at first predominate. Then we observe a considerable admixture of Portuguese (*i. e.* Malacca Portuguese), until the road imperceptibly passes into a street, with here a neat Chinese house, by and by a succession of old-fashioned but clean and neat-looking Dutch houses—trees more or less abounding—ending in a continuous row of houses, without any gardens, chiefly belonging to Chinese. Some of their houses are very neat and well fitted up. For a considerable part of the way the soil seemed to be the same as that at Klaebang, many of the plantations having merely a top-dressing of sand; but near the suburbs the soil itself becomes sandy. The trees (cocoa-nuts, with few exceptions) had a very fair number of nuts; but in many places, I should say in most, they were not improved by cultivation. I visited the court-house, which is one half of a room in the stadthouse, and heard the new president, Mr. Lushington, give judgment, or *award*, as he called it, in a case. A crowd of Malacca *Jawit Pakans*, a race of rogues, filled the room. The walls of the stadthouse are very thick. Each window has two little seats in the corners, of solid brickwork, with a wooden top. All the woodwork is of teak, brought from Java. The church is a very plain, old-fashioned edifice, close to the stadthouse. The latter, from its size and solidity, has a particularly respectable appearance, from which its very plain old European style does not detract. There is no semblance of viranda about it; nothing but substantial square windows. About the middle of the day I went out to Pringate, and saw Mr. Salmond. The first part of the road is through low ground covered with a mass of cocoa-nut and fruit trees. The huts are not nearly so numerous as on the way from Klaebang. A very small part of the road is through this ground. It soon crosses the base of a small low hill, the soil of which is nothing but red gravel or pebbles, precisely like those so abundant in Singapur—on the top and sides of Mount Victoria, for

instance. The rest of the road leads over the sides of similar hills: Pringate itself is the same. All these hills are covered with fruit-trees of various sorts; some are very large forest-trees, yielding fruits. At some places a few cocoa-nuts were to be seen in the red soil, looking pretty well. Although the bottoms of the hills on the left are covered with a thicker growth of trees than the upper part, open spaces occasionally appear, through which the paddy plains are visible. The view from Pringate is very fine; you look down on an extensive and varied landscape—sheets of yellow paddy-fields, with huts, low jungle here and there, hills with masses of forest, and blue mountains at a distance. Notwithstanding the red gravel, of which the hill consists, is of the most barren description, the fruit-trees which are scattered over its slopes have a fine light-green colour, and, though not equal in effect to large forest-trees, give it a park-like appearance, to which some fine cows grazing not a little contribute. Beneath some of the fruit-trees coffee is grown, but the bushes are lanky. I dined with Koon Swee, and again admired the coolness and neatness of the rooms. He put an excellent dinner on the table, partly consisting of European and partly of Chinese dishes. After dinner we drove out, following the road to Pringate for some time, and then turned off to the right and went round Bukit Chiná, another of these red hills, which the Chinese use as their burying-ground. This hill is on the right. On the left are fruit-trees in dense thickets. Beyond them a glimpse is obtained, once or twice, of extensive paddy-fields. To the S.W. of this hill rises another, called St. John's, belonging to H—, covered with fruit-trees, and surmounted by a little Dutch fort. We walked up this hill by a very gradual ascent, which becomes rather abrupt near the top. From the fort you look down on the narrow red line of road at your feet, through the branches of old fruit-trees, which cling to its almost precipitous side. The view all round is very splendid, particularly southwards. In front and to the S.W. lies a large tract of cocoa-nut trees. The dense unbroken mass of leaves of a deep-green colour gives an appearance of high health and vigour to these plantations; and in reality, I understand, they are very prolific, growing out of a soil of mingled sand and black vegetable earth. A small tract of mangrove thicket lies between them and the sea. Behind the cocoa-nuts lie extensive paddy-fields. Huts are scattered over them, but they are without any trees or other vegetation than the paddy itself. A line of scattered fruit and cocoa-nut trees stretching across the paddy-fields in a southerly direction marks a road, I believe. The plains, as usual, are terminated by brushwood. Mount Ophir rises grandly behind. To the E. the eye encounters an elevated broken country, dark with fruit-trees; and to the N. a plain of no great

extent, partly covered with cocoa-nut and fruit trees and partly by paddy, lies between this hill and St. Paul's, on the summit of which rest the grey walls of the ruined Portuguese church built by Albuquerque. After what I have said of the different roads our drives passed over, it is not necessary to add anything more regarding my general impressions of the scenery of Malacca: as a whole, it is, of all the settlements on the Straits, decidedly the best adapted for agriculture. The large tracts of flat country with a whitish clay or loam, less tenacious than any of the sort I have elsewhere seen near the Straits, and with a surface-soil of dark mould, are capable of being formed into any kind of plantations. Judging from the tracts still in a state of jungle that everywhere meet the eye, even when walking along the roads near the beach, there must be a great deal of land available for the planter.* The most striking characteristic of the inhabitants is that they have apparently nothing to do. I really saw nobody at work all the time I was in Malacca, if I except Mr. Lushington. There were not many persons in the streets, and those few were lounging about their own doors. I ought to have noticed in its proper place that on Sunday morning a boat crowded with Malays passed in front of Klaebang, slowly pulling towards the town, with musical instruments, a fine-toned gong, and the voices of the joyous Malays uniting in a pleasing air. In the evening I met a long train of Portuguese, men, women, and children, gaily dressed, wending their way back to town from some excursion. I have omitted to mention, as a feature in all the sea-views, the water-islands to the S.W. of the town. They are rocky, but covered with trees. There are some famous Malay krammats, or tombs of ancient worthies, on them; and at one particular season every year the whole population for days continue to visit them, and pass the joyous time in eating and making merry. I cannot conceive any place better fitted than Malacca to soothe and tranquillize the mind when it has been fretted and worn by the toil and strife of Singapur. But, without a companion, the somniferous influence of the place would soon unfit one to return to the bustle of the emporium. Of the inhabitants, further than as they appear on the mere surface, I had no opportunity of judging; but I was struck by a sort of knavish and forward look which characterised the *Jáví Pakans*, who predominate amongst the idlers in town. The view of Malacca from the sea is pleasing. The coast forms a long curve: the green hill of St. Paul's crowned by the ruined church, a few plain European houses along its base, a line of

* An European company has lately been formed in Singapur for the cultivation of the sugar-cane at Malacca. There are some difficulties connected with the leased tenures, which differ from those at Pinang and Singapur. The subject is at present under reference to the Supreme Government.—1st June, 1846.

small dingy houses along the beach to the N. of the river, and the continuous cocoa-nut plantations, backed by the mountains of Rumbówi, &c., all make a very pleasing landscape; which I recollect struck me very much when I first saw it on my way to Singapúr two years ago. I was pressed with business during my three days' sojourn, and had no time to make inquiries regarding anything; all I saw being little but hurried glimpses.

11th.—I left Malacca for Pínang this afternoon, in the Government steamer *Diana*. The coast, as far as Cape Rachado,* is more or less rocky, and apparently wasting, like that of Malacca.

12th.—This morning, at 6 o'clock, we entered the Straits of Callam—the route which Captain Congalton invariably follows in his frequent voyages between Pínang and Singapúr. The Strait is like a large river, or canal. The islands between which it lies are merely flats, and formed of black mud, covered with mangrove thickets; so that it exactly resembles the mangrove creeks which are so abundant in the peninsula and archipelago. For some time we steamed on, seeing nothing but the wall of the thick mangroves on either side. In some places, where a yard or two of fresh sand had been deposited on the margin, young and slender trees, or seedlings, grew up literally as thickly as a crop of corn. Towards the northern extremity of the thickets, one place of considerable extent was quite naked, and covered with flying foxes, which have settled here for many years. At midday we were opposite the Salangór hill, which seemed scarcely higher than a clump of trees: with a glass, its sides were seen to be covered with cocoa-nut trees, and its summit by a grove of senna-trees. To the S. a low mangrove swamp of great extent stretched along the coast. Behind it the country bore an appearance of cultivation; cocoa-nut trees, as usual, taking the lead. To the N. a portion of the coast is rocky. Cocoa-nut trees, and huts among them, are seen in this direction also. Shortly afterwards we crossed a broad turbid tract of a reddish colour, occasioned by the waters of the Salangór river. From this time (1 A.M.) till dusk we were in sight of a perfectly flat country, covered with brushwood, and extending a long way back towards the mountains.

13th.—At daybreak this morning the Dindings were seen considerably in the rear. On the right, the lofty mountains of Pérák† rise at a distance: the highest of these, Gúnonng Búbú, is a fine object in the view from the Pínang hills. Between 7 and 8 o'clock

* i. e. Cleft.

† Pérák in Valentyn (*Beschreeving van Oost Indie*), whose orthography is usually correct.—F. S.

the eye could occasionally catch the outline of the highest summits of the latter, appearing like a fine filament. It was not till nearly midday that the outline of the island became quite distinct, though still faint. At 3 o'clock we had passed Púló Kindí, and were abreast of Púló Rímán, with its cocoa-nuts on the beach and straggling up its side, among brushwood, to its rocky summit. The southern face of Pinang lay before us, bold and dark with wood. The S.W. point is rocky and abrupt. Within it, stretched towards us, the long curvilinear sandy beach of Tulloh Kumbar Bay, and the cocoa-nut covered coast of Biyan Lepa separated by a round hill, yellow with lalang and grass. Right a-head jutted out the S.E. point of the island, rocky and hilly like the other. Before we reached this point, the hills of the island, the channel, and the main land had appeared jumbled together in inextricable confusion; so that, familiar as I had long been with the whole from other points of view, I found it impossible to distinguish one from another; but, as we entered the channel, they seemed, one by one, to change as if by magic—separating from each other, assuming new arrangements, and altering their outline—till all my old acquaintances looked down upon me with an air of friendly welcome. The feelings with which I gazed on the shifting scene as we proceeded up the channel were many and strong, and I thought this hour had been almost cheaply purchased by two years' absence. I was most forcibly impressed, on reaching the centre of the channel, with the contrast between the low and unattractive aspect of Singapur and the grand massive character of the island itself, stretching along the channel as a bold dark irregular mountain-wall. When at last the town and harbour, with its shipping, came distinctly into view, the scene became indescribably varied, from its union of so much that is grand with so much that is soft. The channel, landlocked on all sides, shone like a broad glittering lake, or inland sea. Nearest to us on the left, lay the Bátú Lanchong range of hills, with the quadrangular mount Restalrig and pyramidal Bátú Báyas resting on the Bátú Lanchong range of hills, which sink undulating into the channel. Over this range were seen the Pentland hills, with the peaked summit of Belmont, surmounted by its bungalow, forming the background of the pass between Mount Restalrig and Bátú Birtam. Beyond Lansdowne and Sans-Souci, northern members of the last range (once covered with clove-trees and crowned with their bungalows, but now abandoned to nature), the north-western or principal mountain group of the island springs up, and continues in a northerly direction, gradually rising till it attains its greatest eastern elevation in Government (or, *par excellence*, the Great) Hill. The face of the Bátú Lanchong range is grassy; grey rocks are scattered over it in abundance, and clumps or tufts

of brushwood appear here and there in moist hollows. The steep side of the northmost range is one dark mass of forest. Lying against it is the partially cultivated hill called the Highlands; its lowest slope covered with nutmeg-trees, and its higher flanks with cloves. A narrow neck of great steepness connects the great range with Mount Olivia, where Raffles laid the foundation of those acquisitions which earned for himself so much celebrity, and might have gained for his country so much advantage. Beyond Mount Olivia, where the house is still standing, is the now deserted Mount Erskine, the low wooded peak of which, resting on the northern channel, forms the centre of the picture. The beach fronting these hills, stretching from Glufor to the S. end of the town, is decked by a continuous fringe of cocoa-nuts. From the extremity of this, and on an apparent continuation of the same low line, stretch, in a long narrow zone, the houses and fruit-trees of the town, with the fort and shipping, till they meet a group of low hills on the mainland, north of the province, thus completely closing in the channel. Above this group towers, in all the majesty of its proportions, Gúnong Jerrai, or Kédah Peak, magnificent from its height, breadth, and sharp serrated outline, and now clothed in its usual blue, misty robe. The long curved sandy beach of the Wellesley Province, with its row of cocoa-nuts, forms the margin of the channel on the right. Behind it, the scarcely seen summits of Búkit Jalutong, and the other higher hills on the frontier of the province, seem to lie at the feet of the dim blue mountains in the interior of the peninsula.

20th, *Búkit Merah, in Wellesley Province.*—Yesterday, at $\frac{1}{2}$ past 3 o'clock A.M., I descended Mount Restalrig. The day began to break as I reached the valley of Pyah Trúbong, and the freshness of the morning air and pleasant recollections rendered the walk to the village of Azer Etam, where I procured a hackney palankeen to convey me to George Town, delightful. In the evening I crossed the channel, pulled up the Paxe river to Bagan Srye, and, guided in the dark by a friendly Malay woodcutter, who was returning to his home at Permatang Pau, but volunteered to prolong his walk, I arrived here at $\frac{1}{2}$ past 8 o'clock. This morning I retraced my last night's road as far as Permatang Pau, and then struck off southwards. From Búkit Merah to Permatang Pau it is rather more than a mile across the paddy plain, which extends nearly the whole breadth between the rivers Prye and Júru, or somewhat less than 6 miles. The Malays are still gathering their paddy, about one-third of the crop being yet upon the stalk. Women and old men are employed in this labour. The produce varies a great deal even in bindings adjoining each other, owing, probably, to a difference in the care and skill of the cultivators; and in a greater degree in tracts which, from dif-

ference of level and other causes, are unequally irrigated. The soil I did not examine closely in many places, but where I did, it was a dark mould resting on and partially mixed with clay. There are large tracts where, owing to depression below the general level, vegetable matter has accumulated and is in excess, and other tracts where it is sufficient (deficient?). I was informed by the Malays that almost everywhere on this plain, in digging wells, they come, at the depth of a man's height, to sea-shells, and that sea-mud is the universal subsoil of the flat tracts. They all appear to be impressed with the belief that the sea formerly occupied the site of their paddy-fields, and that the *permatangs* were sand-banks. There cannot be a doubt that these long bands of sand traversing the clayey or vegetable alluvium of this plain were successively the beaches of the sea; and it is highly probable that some of them at least, before they were annexed to the land or rose above the level of the sea, existed in the channel as banks. As I approached Permatang Pau the soil suddenly changed from clay to sand, but continued to maintain nearly the same level, and to be used as paddy ground. On reaching its margin it rose at once a few feet, and was seen stretching away to the right and left at the same elevation above the plain. It is of considerable breadth, and about 2 miles in length. A public road passes along its centre, and I took that route (the only practicable one at present) southwards. The *permatang* now forms a most interesting scene, all the population of the plain being congregated on this dry belt. It is in fact one large straggling village, with huts scattered over it at irregular intervals, each in its own *kampong* (enclosure), filled with cocoa-nut and fruit trees, principally the former. The point where it is crossed by the Bagan Srye and Búkit Mérah road is, I suppose, about its centre. Here are several shops adjoining each other on the roadside, an old Attap village mosque, and a *pangúlú's* *tánah*.* After proceeding along the road for some time the scene changed, from the huts becoming less numerous, and the cocoa-nut and other trees being entirely replaced by the *jangús* (cashew-nut), which grows here to an unusual size. Here and there boys were merrily climbing the trees and gathering the fruit, and groups of children were playing under the trees.

Towards the southern extremity of the *permatang*, the huts again thickened till they grew into another village, with a mosque, and shops called *Sangé Dúraká Júrú*, lying upon a small stream, which marks the termination of the *Permatang*. The road now lay through the open paddy plain in a nearly straight line for about two miles, exposed to the full heat of the sun, and unenlivened by any huts or trees. It then enters a pass between the

* Chief's estate,

two westernmost of three low hills, which run almost due E. and W., and are called Búkit Tangah (*i. e.* Middle Hill). The lower face and bottom of this little range has a fine appearance as it is approached from the N., being densely covered with fruit-trees of a dark foliage, and large cocoa-nuts. The paddy plain, on the right or W. side of the road I have passed over, is of no great breadth until past the village of Dúراكا Júruk, the mangrove swamp of the Púز stretching down in a south-westerly direction, and preventing the extension of cultivation. After that village has been passed, the western boundary of the paddy-plain bends towards the sea, causing the plain to bulge out till it attains a breadth of about two miles from the road. Several small permatangs, with their usual accompaniments of fruit-trees and huts, were scattered over it. The division of the plain eastward of the road is of considerable extent, forming a somewhat irregular area of more than three miles square. Towards the road, every inch is as fully cultivated as the plain on the western side; but nearer to the hills it is studded here and there with forest-trees, showing that it has more recently been reclaimed from a state of nature. Some portions also seem to be only half cultivated. In riding from Dúراكا Júruk to Búkit Tangah, the object which most attracts the attention is the great domed mass of Búkit Moratajam, which appears throughout to be quite close on the left hand, but yet continues to preserve the same apparent distance. The fact is, its base is of great extent, and its flanks come down into the plain over such a large area, that it presents a wide and imposing front throughout the whole circuit from Búkit Mérah to Búkit Tangah. It is above 1800 feet in height.

It was an agreeable change to leave the hot plain at once, and pass into the low defile between the Búkit Tangah hills. On the right a portion of the most westerly hill is planted with nutmeg-trees. A Malay woman was at work among them. I asked who the planter was, and she replied "Che Ahmat," and pointed to a Malay man who was busy digging out the lálang at the further end of the plantation. On seeing me he put down his chemkul (a kind of hoe, the universal substitute for the spade), and came forward with the courteous, good-humoured, and obliging manner which distinguishes the natives of the Wellesley Province, or, I should rather say, the Kedah Malay, and entered into conversation. He invited me to rest during the heat of the day in his house, and after I had ridden forward and looked over the country to the S., I returned with him. He struck off westward, conducting me along the foot of the hill through a grove of trees to his house, which I found to be quite an uncommon edifice for a Malay being very neat, and having a pleasant little veranda

with Venetian windows. One could not wish to take shelter from the sun in a more quiet and sequestered spot.

I rested here luxuriously for about two hours. No sooner had I entered than one of the inmates hastened to climb a cocoa-nut-tree, select a nut, and open for me its secret fountain of the most delicious beverage that a thirsty traveller can drink. We had much talk about the return of Malays to Kedah, the paddy crops, late seasons, my host's own history and that of his family, ending in a geological discussion respecting the oceanic origin of the plain. As a striking proof of this, it was mentioned that a permatang to the E. of Búkit Tangah, called Permatang Bátú, was almost wholly composed of sea-shells, and that shells were found in abundance on the top of Búkit Dúrika Júrú, a low hill a little to the N.E. of Búkit Tangah. I was curious to see this remarkable deposit, and we proceeded to the place, crossing a number of paddy-fields which lie between the two hills. The paddy was strong in general, but in some places had suffered from superabundance of water; it was also not so far advanced as the crops farther N. The hills, for there are two, lie close to the mangrove thicket, and have been islands or an island at a recent period. The one nearest Búkit Tangah we ascended first. The path lay over an abutment which runs out into the plain in a westerly direction, to the length of perhaps 80 or 100 feet; but of this I could not well judge. Its height, where the path crosses it, seems to be about 15 feet above the paddy plain. The top, so far as I examined it, was wholly composed of modern sea-shells lying very close to each other, and embedded in a stiff blackish soil. At one or two places I noticed points of granite rock protruding. We descended the other side of this abutment into the hollow between the N. and S. hillocks, which is covered, as is the side of the southern hill, with fruit-trees, chiefly magnificent *dúreyans*,* of a height I do not recollect to have elsewhere seen. We then ascended to the top of the southern hill, which is composed of large rounded granite rocks. On the southern face of the other hill there is another plantation, or kampong, belonging to an *ex-panghúlu* † *mokám*. This plantation, to judge from the appearance of the cocoa-nut and other trees, must be very old. A road leads from this kampong through the mangroves to a creek, which, taking its rise in the paddy plains to the N., bends inland to this point, and then pursues a N. direction to the Júrú river. Boats of 6 *kóyans* ‡ burden ascend to this place. At the bottom of the eastern side of the northern hill are immense rounded

* *Durio Tibethinus*, Linn.

† Appointed head man.

‡ 1 *kóyan* = 48 *pikú* = 6400 lbs., nearly 6 cwt.—F. S.

and flattish granite rocks with deep hollows between them, strewed over a considerable space. They are far too large to have descended the slight declivity of the hillock, nor could the force of the rain pouring from it have washed away the earth and disintegrated the surface of the hillocks, so that there cannot be any doubt that this has been the work of the tides and waves of the sea, which do not now approach within a mile, save by the creek. We returned to Che Ahmat's, and after resting another hour I returned leisurely to Bukit Merah. On the way I dismounted at Dúraká Jurú, where a number of Macao Chinese are settled as paddy-planters. They were busy cleaning the paddy, which they did with more rapidity than the Malays, having winnowing-machines, &c. They are chiefly renters from the Malays, but some possess lands of their own. The soil of Bukit Tangah is a coarse granite. Che Ahmat had dug a well and a tank on his ground, the former of considerable depth, and, so far as I could see (to the depth of 8 feet or so), the soil was uniform. Water is found in abundance all round the hill, on digging to a small depth. The surface, from the prevalence of quartz, is coarse and unfruitful. The hill was formerly cleared for pepper, but, with the exception of its lower part and the piece cleared by Che Ahmat, it is overgrown with lalang, and towards the top with low brushwood. In the evening I crossed the plain from Bukit Merah to Permatang Pasir, and struck across it to Bukit Jalútong, which is composed of the same rock and soil as Merah. The colour varies considerably; at its N.E. corner it has a redder hue than on the side directly facing Merah; a fine white clay, exactly resembling it in everything but colour, is also found there, and some other intermediate colours, such as yellow, pink, &c., resembling in this respect, as well as in the alternate shades of colour, the clay strata of Pearl-Hill near Singapur. The clay is so fine in its particles, and imprints itself so readily, that it may be used like chalk or slate for marking. Its mark has the colour of the clay, except some of the tawny stones, which give a red streak. Strewed along the foot of that portion of the hill which they are at present clearing, were some large fragments of a harder rock, nearly approaching in appearance some varieties of laterite, particularly from its dark or blackish colour, but it yields a red streak, similar to that of the soft clay mentioned above. Near the surface also, particularly in the section on the upper side of the road, which Colonel Low is at present cutting along the northern base of the hill, there is an irregular layer of indurated gravelly stone, exactly resembling such as characterizes some hills of laterite. The surface of the higher part of Bukit Merah is full of this gravel. These indurated blackish fragments and gravel are doubtless the clay of

which the hills consist, metamorphosed in different degrees by volcanic action and a greater elevation, and having been ejected through fissures whose courses would probably be exposed, were sections made, in the shape of dykes and veins, as is often the case in the Singapúr hills. These hills may be considered as members of the semi-volcanic zone of the Straits of Malacca.*

At the point of Búkit Jalútong, on the side which I visited, the sandy soil of Permatang Pasir commences. On this plain, about twenty feet from the foot of the hill, a well has just been dug. At a depth of three feet from the surface there is a bed of white clay of the same texture as the rock of the hill. On the face of the hill there are some coffee-plants, but from want of shade they do not flourish. The vegetation on these red clayey hills is distinguished by its dark-green hue. The nutmeg-trees with which Búkit Mérah is covered are decidedly the finest in the three settlements; their dense dark foliage gives them, indeed, an aspect quite peculiar. Unlike Búkit Tangah, these hills have no springs. The soil is of a loamy clay, and entirely similar to the finer marls (not calcareous) of the Devonian system; it is of a deep-red colour, whence the name of the hill—*Búkit Mérah*, i. e. *Red Hill*. When dipped in water it rapidly falls away into a fine powder. Similar soils in England are very fertile, and produce rich crops of all sorts. Besides the volcanic pebbles and fragments, small pieces of quartz are found interspersed among it. The hill is about four miles from the present coast of the province. "From the steep scarped appearance of its seaward face (or that which must have been opposed to the waves rolling in from the Bay of Bengal) and its general configuration, it may be inferred

* "In coasting along the W. shore of the peninsula from Pínang to Cape Rachado, a high chain or rather series of ranges of mountains is observed inland nearly the whole way, which, from their generally sharp-peaked summits, the nature of the detritus brought down from them by the rivers, and the evidence afforded by the few points which they have reached, we are justified in believing to consist in great measure of plutonic rocks. In front of this range we discern a broad tract of country, often appearing to be perfectly flat, and very little above the sea-beach for miles together; from which sometimes low hills rise like islands out of the sea. These hills are frequently quite solitary, and at a great distance from the central mountain, or near the coast. Further inland they seem to be generally in groups, and towards the mountains the country in some places appears hilly and undulating. At Malacca these low hills are occasionally so much grouped as closely to resemble portions of Singapúr, and they are covered by pebbles and scoriform and altered fragments of rock precisely similar to those found on some of the Singapúr hills (which I believe in every case to be related to volcanic fissures of eruption, opened contemporaneously with the elevation of the hills). In some of the hills opposite Pínang I observed similar fragments. In both cases the soil had a deep-red, ferruginous aspect. Cape Rachado is described by Crawford as consisting of quartz rock interspersed with frequent veins of clayey iron ore. That most of the hills scattered along the western plains of the peninsula were islands in the sea at no remote period, there can be no doubt. The plains from which they spring are flat, generally only a few feet above the level of the sea, alluvial, and in some places abounding in marine shells of the same species as those at present found in the straits."—*On the local and relative Geology of Singapúr, &c. : by the Writer.*

that a considerable portion of it was washed away by the sea, and its existence as an island continued during a long period subsequent to its elevation.”*

The contrast between the frank simplicity and humour, harmonizing well with a certain grave dignified self-possession, and genuine politeness which characterize the manner of the Malays of Kedah, and the bravado, sinister, and impudent bearing of the insular Malays at the southern extremity of the peninsula, is very remarkable. The former, though polite, distant at first to Europeans (as a class either too repellant or too rudely obtrusive in their manners to commend themselves to the good-will of the Malayan peasant, who, beneath his often unpromising exterior, conceals a lively sense of his own honour, and respect for that of others), are no sooner addressed in their own language with good humour and courtesy, than all reserve disappears, and is replaced by the most obliging communicativeness. The latter, on the other hand, are, in general, saturnine or impertinent, and answer inquiries with a degree of suspicion and dislike which forbids any profitable or genial intercourse with them. Thus, while the agricultural Malay of Kedah makes one of the best companions in the world, the maritime, and most frequently semi-piratical Malay of the southern islands, proves about the worst. The Wellesley Province, during the few days of my sojourn at Bukit Mérah, wore an aspect of abundance and general hilarity that Arcadia might have envied. During the harvest-season an unwonted excitement and a livelier geniality pervade the breasts of the Malays. Their hearts open to each other, and are more deeply impressed with thankfulness to the unseen powers, and to *Tuan Allah*,† whose ministers they are, for having heard the invocations with which they sowed the seed, and caused the food of man to be again plentiful in the land. Hence they begin the harvest with religious observances; and, as their houses become filled with paddy, give vent to the general gladness in musical and dramatic entertainments. During the whole evening the sound of the *wáyang*, *máyong*, and *máin mandrah* from the villages around reached Bukit Mérah; and on awaking before the dawn, I heard it still prolonged.

I was informed by several Malays at different places that the crops of paddy had been inferior for some years past. The rents appeared to average three dollars an orlong (a square measure equivalent to about an acre and a third). At the large Chinese establishment at Dúراكa, I was told that the farmer, like other

* From a paper by the writer ‘On the Strait of Malacca and the alluvial Plains on its Borders.’

† *Or Túhan Allah*, i. e. Lord God. If they believe in any other unseen powers, that part of their creed is a relic of the idolatry of their ancestors.—F. S.

Chinese engaged in the business, owned some lands himself, and rented the rest. In this quarter the rent is generally four dollars. At the time of my visit the attention of European capitalists was much attracted to the province in consequence of the Supreme Government of India, after for some years resisting the solicitations of the merchants and planters of Pinang, having, under instructions from England, placed this settlement on the same footing as Bengal with respect to the importation of sugar into England. A sudden impetus was thus given to the cultivation of the sugar-cane, which had hitherto been carried on at a great disadvantage; and some planters seemed inclined to purchase paddy-lands for making sugar plantations, rather than clear waste tracts for that purpose. The Malays in the neighbourhood of Bukit Tangah had been too long inhabitants of the province, and had formed too many family connexions, to be willing to sell unless at high prices, perhaps thirty to forty dollars. Those at Sangi Susat were selling out, in order to return to their native country, Kedah, at ten to twenty dollars per orlong. In the vicinity of Bukit Mérah, the rents were paid in kind at rates from four to six *nálíh* per orlong.* The produce per orlong varies greatly, so much as from one and a half to five *kuchas*. The value of lands and rents has fallen considerably of late, owing, in some measure, to the too rigorous exaction of assessment (a new burden, to which the Malays were strangers, and which they could only regard as a second rent in addition to the quit-rents reserved by Government with their grants), but principally to the old Malayan chiefs having been allowed by the Siamese to return to Kedah, whence they were expelled under circumstances of great treachery and diabolical cruelty in 1821. The Chinese (from Macao) are increasing in number. They plough the land better than the Malays, and get heavier crops. At Dúراك I found from forty to fifty Chinese engaged in cultivation of paddy, about eighty at Pau, as many at Paoyo, twenty to thirty at S. Susat; in the neighbourhood of Bukit Tangah there were about eighty, but there they plant sugar-cane, cloves, &c.

The river Prye, as far as I went up it on this occasion, and much farther, even beyond the limits of the province, is a broad and deep salt-water creek, in the middle of a belt of mangroves. The Malays informed me that the head of the creek is at the

* The Malayan corn-measures universally used in the province are the

Kai	. . . 4 of which =	1 Chupah
Chupah	. 4	" 1 Gantang
Gantang	. 16	" 1 Nálíh
Nálíh	. 10	" 1 Kucha
Kucha	. 5	" 1 Kóyan

Kóyan, which weighs about 60,033 lbs. avoirdupois, according to Colonel Low.

Labu Buting, where a small stream runs into it. Its proper name farther up is the *Súngaí Kálím*, and it has two tributaries, the *Súngaí Jara* and *Súngaí Labu Marijam*, or *Súngaí Bárú*. The course of the creek is very winding, and at some places it touches the dry plain. One of these places is at *Bagan Srye*, on the left bank, where it is washing away the land.

20th.—This morning I again rode to *Búkit Tangah*, and thence southwards. Beyond *Búkit Tangah* the country changes from a flat alluvial plain to an undulating sandy tract. This is succeeded by a broad level belt, of which a small portion on the N. side, above the level of the sea, consists of a whitish clay, with streaks of red, and is cultivated as a sugar plantation by Chinese. Next comes a swamp covered with mangroves, and the southern margin of the belt is washed by the *Juru*, here flowing close to low hills of pure white sand, at least on the surface in no way differing from that on the sea-shore. The mud of the swamp spreads over the sand at its border. For some distance beyond this the country is undulating and sandy. It is in the southern districts of the province that the great field for sugar-planters will be found for some years to come. Many eligible tracts for plantations exist between the *Juru* and the *Prye*, and in the great paddy-plain to the N. of the latter river; but planters look to immediate profit, and would find it impossible within any limited time to buy up, from the numerous native holders, a piece of ground in one place sufficiently large for their purposes. The paddy-lands are, for the most part, subdivided among their owners in pieces varying in size from fifty to two or three orlongs.*

After passing a month in *Pínang*, a great portion of which was employed in exploring one of the mountain ranges, described at some length in a paper communicated to the Asiatic Society in *Bengal*, I left it with much regret. The exceeding magnificence of its mountain views, the richness and variety of their component parts, and the coolness and transparency of the atmosphere which this country enjoys give a freshness and elasticity to the mind never experienced in the sultry plains of *India*. I have now explored nearly every part of the settlement, and hundreds of scenes most interesting and dissimilar have rewarded my toil. It is almost inconceivable how nature, in so small a compass, has contrived to crowd such a wonderful diversity of objects. The old mossy rocks, fir-trees, and ferns of the higher hills, beautiful and odoriferous flowers which adorn all the forests in spring, the deep ravines lined with dense and picturesque shrubs, in the rocky dells

* During the last twelve months several new plantations have been commenced in the southern districts—two on the *Juru*, four in the central part of those districts, in addition to three which had been formed at the time of my visit, and two on the *Krean River*. 1st June, 1846.

of which the streams force their way; the gloom of the more gigantic and yet unscathed forests, haunted only by wild animals, where silence is broken only by the melancholy cries of the apes and the notes of birds never heard in inhabited districts; the slow winding rivers, generally solitary for miles together, but sometimes bearing the light prahus (barks) and flowing past the kampongs of the Malays, are but a few of numberless and infinitely varied scenes and objects which make a delightful and indelible impression on the memory.

Excursion from the town of Singapur to Pulo Ubin, in the Northern Strait, in March, 1846.

ON Thursday afternoon (12th March) we sent a boat round to the head of the Sirangun creek, which is accessible from the town by a road across the island. Next morning we started at five o'clock, arrived at the creek in good time, and proceeding from its mouth eastward landed at Pasir Rís,* a kampong, or hamlet, consisting of half-a-dozen huts on a sandy level thrown up by the sea and overgrown with weeds, some of which were covered with pretty flowers. A few cocoa-nut trees are scattered about. On the right and left the thicket encroaches on the narrow open space; behind it there is a small, stunted, and neglected fruit-garden, backed by the uncleared wood. A path full of puddles, from which our feet were but half protected by some sticks, led us across the open ground into a dry sandy tract covered with low trees, not crowded, and therefore the more pleasing. Farther on the ground rose slightly, and became a little clayey; rising at length into a ridge of nearly pure sand, and covered with the blackened trunks of trees recently felled and half burnt by our Chinese companions for the purpose of forming a gambir-plantation.† From the summit the ridge was seen to stretch away on both sides, with hollows descending from it in a S.S.E. direction, to a broad mangrove swamp, through which flows the Sangi Tampinis. At the mouth of this creek there is a small hamlet, occupied by Chinese sawyers, who had taken alarm at the rapid destruction of the wood by the gambir-planters, and felled a strip to intercept their advance upon them. In Singapur disputes between Chinese wood-cutters and planters are not unfrequent; and the latter, it is probable, are more frequently to blame than the former. The soil belongs to the crown, and the planter takes possession of a tract without any licence, nor does he pay rent; yet the sense of ownership so grows upon him, that he demands a price for every tree felled by the wood-cutter in the wood adjacent

* Pasir, *i. e.* lowland near the sea.—F. S.

† Gatab, gambir, or gambir-gum, collected from the *Uncaria Gambir*.—F. S.

to his plantation, from which he derives his supply of fuel for his boiling-house. The forest on the hillocks around us was peculiarly stunted, owing to the barrenness of the soil. On the S. side of the island, opposite to this tract, the soil is similar; and it is, therefore, probable that the sandstone beds, from the disintegration of which it is produced, extend continuously across the breadth of the island in this direction, *i. e.* from Pasír Rís to Tánah Mérah Kichí, or the Small Red Land, but not above $3\frac{1}{2}$ miles in distance. Emerging from the thicket, on retracing our steps, we stood on the beach at Pasír Rís, and admired the secluded and beautiful view. The Strait, landlocked on every side, was transformed, to the eye, into a placid lake about three miles long and two miles broad. It appears to be surrounded by jungle, the mangrove predominating wherever there has originally been a deep indentation in the coast. On the N. the opposite side of the strait is completely excluded, save at one point, by the hilly island of U'bin. A broad bay on the shore of this island is nearly filled by a low flat islet, or mud-bank (Púló K'tam), covered by a thick sheet of green-gleaming mangroves. We stood across the strait towards Púló K'tam, passed its eastern point, and then proceeded eastward along the shore of Púló U'bin. Several rocky points slightly project from it covered with trees, only a few of which are distinguished by their size, and, being farther apart than is usual in equinoctial forests, their luxuriance and unstunted growth are seen in all their beauty; the many abrupt and rocky masses partially visible, and clothed with mosses and lichens, and the shrubs springing from their clefts, prevent the larger trees from growing closely together, and bring their trunks here and there into view. Shrubs, creepers, and parasites of various kinds so cover the dead rocky masses that they seem as if they teemed with vegetable life; while the intervening bays are almost concealed by unbroken masses of mangroves.

Passing the S.E. extremity of Púló U'bin, we pulled across the strait, that separates it from Púló Tukung Besar, to two small islets lying not far from the latter, and called Púló Sij'hat. The smaller or easternmost of these I examined as minutely as circumstances would allow. It is one solid mass of rock, for the most part if not wholly volcanic, rising a few feet above the sea, and strewed round its base with fragments of rock and broken coral. A few small trees grow near its centre. The W. side is covered with similar fragments, and supports a scanty vegetation, but on the E. the bare rock is exposed, sloping gently to the sea. Its lower portion has a blackish surface, and is smooth and solid. At its N. edge there is a basin bearing marks of igneous action on its sides, which are rugged, slightly scoriaceous, and of a brownish red colour. The upper portion of the rock on this side is marked

by numerous parallel vertical fissures running nearly S. by E. These are crossed by less numerous parallel fissures. Some of the edges of the laminæ, included between the fissures of the first series, slightly project in narrow ridges above the general surface. On the S. side of the islet a similar structure was observed, and where the rock had a fresher or less weathered surface, the appearance of fissures and ribs disappeared, and it was seen to be traversed by parallel zones, each consisting of several thin parallel lines or cohering layers of a darker colour than the body of the rock. Across these, at an angle somewhat less than a right angle, and separated by wider intervals, ran dark parallel lines. The rock hitherto described passes gradually from basalt to greenstone. Of a few specimens from different places one had a felspathic base of a light grey colour, with a faint bluish tinge, in which were specks of dark green hornblende or augite (in one place arranged into a band) and very minute metallic granules, with a coarse and splintery fracture and translucent edges; another was of an uniform dark greenish grey colour, fracture very fine splintery; a third a cherty rock of a light bluish colour and flinty fracture; a fourth a dark uniform blackish green basalt; and a fifth greenstone of an uniform light greenish grey colour. The mass of rock, of which these were specimens, was traversed on its S. side in a S.S.E. direction by a vertical vein, about 2 inches in breadth, filled with white quartz. Not far from this, but more to the W., the rock cannot be distinguished from a clay-slate. It is entirely devoid of the hard vitreous character of the rocks previously noticed. Its fracture is earthy. It is regularly laminated, being intersected by three systems of cleavage; one, of which the plane is at a small angle with the horizon, dividing it into laminæ about an inch in thickness, and two perpendicular to the other and crossing each other, subdividing these laminæ into small rhomboidal tables, which are readily detached from the surface.*

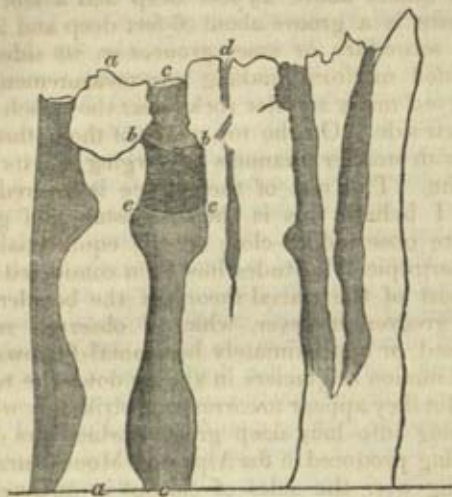
* Although when on the spot the great mass of the islet appeared to be undoubtedly volcanic (and I had not time to trace the boundary between the more argillaceous and the silicious portions), I find myself, after examining the specimens which I brought away, unable to decide confidently whether the whole may not be metamorphic. If the greater part of the rock be volcanic, it seems necessary to believe that it was formed beneath an argillaceous bed. It is more probable, however, that such a bed furnished the material of the whole rock, and in that case it would merely be a question as to the degree of fusion requisite to account for the varying mineral character of the mass. In those places (if any) where the fusion had been complete, the rock would be entitled to the name of volcanic. Where it had been imperfect, it would be metamorphic. That the rock from which my specimens were obtained, if not volcanic, was so far melted as to allow of a free motion of its particles, and even some new chemical combinations, is clear. The result has been, that in the space of a few square yards we find clay-slate, Lydian stone, hornblende-slate, and several varieties of greenstone, some of which pass into basalt.

The other islet is considerably broader and higher than that just described, and covered with luxuriant vegetation. The large trees which formerly crowned it were cut down some time ago, but young ones are already lifting their heads above the under-wood. We pulled round it, and the rock appeared to be similar to that of the smaller islet. A specimen from one spot, where it possessed a laminated structure similar to that before noticed, proved it to be much more indurated, somewhat resembling flinty slate, but approaching more nearly to hornblende-slate.*

On our return we pulled close in to one of the points on the S. side of Púlo U'bin, where we had noticed some huts of some Chinese employed in quarrying granite for the supply of the builders in the town, who use it for the foundations of houses. Struck by the extraordinary appearance of some of the granite rocks on and near the beach, we landed to examine them more closely. Their sides are fluted, presenting regular vertical concave furrows and convex ridges. A little way in from the beach, and on the lower slope of a hill which rises from it, stands a very large rock, of which two faces are visible, the others being concealed by luxuriant shrubs, and the summit overhung with trailing plants. When seen at a short distance, it is hardly possible to avoid mistaking it for the remnant of an ancient temple rudely sculptured out of solid rock, since a row of colossal misshapen images seems to project from its front; but on a closer approach my amazement increased; for, too irregular for a work of art, it was difficult to conceive that it could be merely a work of nature. In the woods on the granitic mountains of Pinang I had detached masses of that rock in every possible state and condition; either in solid boulders of vast size, cubical, or nearly globular, or in smaller blocks piled upon each other with the regularity of druidical masonry. But I had never seen or read of granite carved by nature after the fashion of the mass now before me. On the perpendicular face of the rock are scooped out from top to bottom deep concave hollows or grooves varying in their dimensions. The rock between them formed huge projecting columns rounded at their summits. In some a slight, curved groove or fissure crosses a little below the summit, and gives it the appearance of a cup holding a rude globe, for immediately beneath this fissure the column contracts very much on both sides. Lower down it again bulges out, but more on the left than on the right side. Its

* The direction of the principal zones and fissures, with the general direction of the hill-ranges and valleys, and the strike of the arenaceous and argillaceous strata of Singapur, have been elsewhere described by me in connexion with the geology of the island (semi-volcanic in its structure and composition), and its relations to a wide region traversed by the great volcanic band of the Indian Ocean.

sides then continue with a slight inclination inwards, and further down converge more rapidly. It then swells out for a little, till its further course is lost in the ground. Throughout a portion of its height the opposite curves of the sides somewhat resemble those of a vase. The bottom of the grooves between the columns is smooth and of a nearly uniform depth, although uneven. Of these singularly shaped pillars five or six which are contiguous closely resemble each other. When viewed from one side they are all seen to be scooped quite round at the places where they contract, so that their outlines appear thus:—



a a is a front view of the easternmost pillar; beyond it, towards *c* and *d*, the regularity is broken, and the grooves and intervening ridges cease to be symmetrical. The shaded parts are the grooves. The groove marked *c c* is a very remarkable one; the upper part has a perfectly regular, vertical, semi-cylindrical form, which ceases abruptly at *b b*, where the groove slopes evenly inwards at a small angle with the horizon, so that the portion darkly shaded forms a cavity apparently about five feet in depth. At *c c* the groove returns to its previous depth. A slight groove, an inch or two in depth, occurs at *d*, and deeper ones appear farther to the right.

On clambering up to the top of this rock I found the grooves to be partially prolonged on the upper surface in an inclined direction. The surface is also worn in some places into cup-like hollows, some of which are filled with mould and covered with grass.

At no great distance further up the hill I came to another rock of much larger dimensions, in like manner grooved in front. It is traversed by a chasm from 6 to 8 feet broad, which divides it into two parts. The sides of this chasm are much fresher than the external surface of the rock, and unmarked by any furrows.

This mass was evidently split in two at a time long subsequent to its existence as a separate rock and the formation of the grooves upon it. The extremity of one of the divisions projects over the sloping surface of the ground so as to form a capacious cave. I clambered round this mass, and at one place saw a large fragment which had fallen from the edge of the rock, and lay against it. On its surface there is a cup or spoon-shaped concavity, about 2 feet in mean diameter and 1 foot in depth. At another place a second projecting rock is seen. On this side there are numerous grooves, some of them not more than a few inches in depth and breadth, and others above $2\frac{1}{2}$ feet deep and 2 feet broad. At one place there is a groove about 6 feet deep and 2 feet broad, with smaller secondary or inner grooves on its sides. A heavy shower prevented me from making any measurements. On my return I observed many smaller rocks near the beach with similar grooves on their side. On the top of one of them there is a long deep trough with smaller channels converging into its end like the sticks of a fan. The rest of the surface is covered with slight depressions. I believe this is the first instance of granite rocks near the shore observed so close to the equinoctial line; their absence in intertropical latitudes has been considered as an argument in support of the glacial theory of the boulder formation. None of the grooves, however, which I observed resemble the parallel, inclined, or approximately horizontal furrows, which are caused by the motion of glaciers in sliding down the rocky trough of a valley. But they appear to correspond strikingly with the giant caldrons passing into long deep grooves, which are described by Agassiz as being produced in the Alps and Mount Jura by streams of water falling over the sides of chasms in advancing glaciers, and acting as an erosive moving force on the subjacent rocks. My hurried and restricted observations hardly warrant a conjecture as to the probable origin of grooves here described. The supposition that most forcibly presented itself to me on the spot was, that the several rocks, before they were shattered and separated by the convulsions which placed them in their present positions,* had been the bed of a mighty waterfall which gradually

* The abundance of conglomeritic rock in Singapur and the neighbouring islands, interstratified with clay and sandstone, seems to justify the supposition of an ancient continent in the vicinity existing long anterior to the latest volcanic action which converted these aqueous rocks into the present land. Perhaps in the granite of Pálo U'bin we see a remnant of that continent, and in its grooves the channels down which a portion of the materials of the conglomerates descended in their course to the sea. The fact that some of the lower fluted rocks are partially below the level of the sea shows that there has been a subsidence of the granite, and this may have been incident to the breaking up of the continent. Every new fact that comes to light agrees well with the hypothesis of "a great Australasian continent, an extension, probably, of the present

wore their sides into furrows, at a period when the sea and land were in a very different state from what they now are. A succession of falls would account in some measure for the step-like position of the rocks with respect to each other, and for the spoon-shaped hollows on the surfaces of some of them passing into the vertical grooves on their sides. It appeared to me that ordinary atmospheric erosion and decomposition were totally inadequate to explain the shapes and size of the grooves. In many places they are overgrown with moss and lichens, and many, if not all the deeper ones, are prolonged under ground, and thus protected by the soil of the hill, which must have covered them for a considerable time, since large trees are rooted in it, and the mould proves that these are the descendants of a long succession of predecessors. The aspect of the rocks is not such as rapidly disintegrating granite wears, but, on the contrary, grey, like that of an ancient building.*

I could find no traces of any fissures coinciding with the direction of the furrows. Yet there can be little doubt that, to whatever agency they be referred, they were first opened along lines where the cohesion of the granite was comparatively weak. The regularity with which the projecting columns of the rock first noticed are traversed at two places across the direction of the grooves by depressions, seems to show that the granite has an internal arrangement similar to that so frequently observed in this rock, which causes it to be shattered or to break down into blocks more or less cubical. In one of the lower rocks which the Chinese are quarrying they had laid open two parallel vertical veins traversing the entire rock, so as to include a lamina or plate of about an inch in thickness. One side of this plate sparkles with metallic grains, which I have not yet examined, but which appear to be minute iron pyrites. The other side is covered with

continent of Asia," having been broken by local subsidences, destroying its continuity, and producing peninsulas and islands in wide shallow seas where the depression was least considerable. Over the greater part of the area of subsidence at later epochs, there appear to have come into action volcanic elementary forces—where the subsidence has been least, generally in zones related to the great axes of elevation of the ancient continent; but where greatest, in independent curvilinear bands radiating from centres of most intense force, and only at their extremities, on approaching the margins of the depressed area, converging towards, or assuming directions indicating the influence of, the ancient lines of elevation or fracture.

* Whether or not lichens, &c., protect rocks from decomposition or disintegration, it is certain that those buildings which are covered with them, exhibit the least tendency to yield to atmospheric action. (See Parliamentary Report on the Materials of Public Buildings in England, cited in Gwilt's Dictionary of Architecture.) In Pinang, where the granite is very various in its composition and structure, the decomposing rocks have a comparatively fresh surface. Those that do not yield have vegetable coatings, generally blackish, whitish, or grey.

a rusty stain, resulting probably from the fissures on that side having been exposed to the air, and consequently decomposed. Of the exfoliation so common in exposed granite in the Pinang hills, I saw no trace on any of the rocks here.

As we pulled away from this place and looked back, even the want of light and shade, and the heavy rain that was falling, did not prevent our acknowledging that it possessed a character of picturesque beauty of a very pleasing and uncommon kind. The forest-trees in Singapur do not in general attain sufficient size to assume that air of grandeur which distinguishes those on the Pinang mountains, and they are so blended with the underwood, which grows up like a thick crop of rank weeds around them, and so interwoven by creeping and pendant plants into a dense mass of green, that their individuality is lost. At this spot, however, many trees rise up in all their natural strength and beauty, and expand in mid-air in their full proportions. The number of double or married trees (as they are called) congregated at this place was indeed remarkable; and when we recollect that the Hindús, who, in remote ages, occupied a great part of these regions, as is shown by their ancient Zaba on the River Johór, which flows into the strait between Púló U'bin and Púló Tukung, either selected the neighbourhood of such trees for the sites of temples, or planted them where they do not grow naturally, it is again difficult to resist a momentary belief that these grey pillared and fluted rocks are really the remains of some great temple overborne by many centuries of desolation.

In the strait, which should have been mentioned previously, is Gúnong Bú, a broad pyramidal hill, which, as we approached the E. extremity of Púló U'bin, and the wide estuary of the Johór River, on the left of the old Singapur Strait (Salat Tambrok), was seen at an apparent distance of 5 or 6 miles. It is termed by seamen Little Johór Hill, but forms one of the most prominent landmarks on entering the Strait of Singapur from the China Sea.

XIX.—On the Site of Ashtaroth. By Captain NEWBOLD,
H.E.I.M.S., F.G.S., &c. &c.

Introduction.—Mezáríb, a castle, with a small village, distant 3 days' journey S. by W. from Damascus, is marked in modern maps as the site of Ashtaroth, the capital of Og, king of Bashan [Joshua ix. 10]. This opinion seems to have originated with Colonel Leake, who, in his preface to Burckhardt's 'Travels in

Syria and the Holy Land' (p. xii.), has clearly shown that the site of Ashtaroth cannot be far from that of Mezáríb.

During an excursion in Haurán,* last winter, I passed a night in the castle of Mezáríb, and was agreeably surprised to hear the name of Tel-el-'Ashtereh [the hill of 'Ashtereh†] mentioned by the sheikh in his enumeration of the ruins in the vicinity of Mezáríb. Circumstances not permitting me to visit it at that time, I passed on direct to Omm Keís without examining the locality; but, on returning from Palmyra to Damascus, I visited Haurán and Lejá again, and proceeded to Tel 'Ashtereh, through Šanameín and Nawa; the particulars of which route are given at the end of this paper. The bearings were taken with a prismatic compass by Troughton and Simms; and the principal angles corrected by a box-sextant. In June, 1846, I found the variation of the compass to be 8° 15' W. My travelling rate, on horseback, was 3¼ miles per hour.

Tel 'Ashtereh is a large mound, partly natural, partly artificial, in the midst of a vast plain, at the distance of 2 h. 25 m. ordinary travelling [7¼ miles], nearly S.S.W. from Nawa, between it and Mezáríb, from which latter place it bears W. 34° N., and is about 1 h. 35 m. distant [5 miles]. It lies about 1¼ h. from Adhra'át [vulgo, Dra'a], the ancient Adraa, or Edrei, a little to the right of a line drawn from that place to A'bil (Abila); a position which nearly coincides with that assigned by Eusebius to Ashtaroth, which, he says, is 6 miles from Adraa, lying between it and Abila, and 25 miles from Bostra ‡.

The circumference of Tel 'Ashtereh is more than half a mile, and its height from 50 to 100 feet. Its base is formed of trap-rock; and its upper part is covered with a peculiar dark ash-coloured soil, mingled with stones and fragments of ancient pottery, such as are invariably found on sites of the most ancient places in Syria, and are particularly observable on the mounds and barrows so thickly scattered over the plain now occupied by Turkománs, between Antioch and Aleppo. Near the base of this hill, ancient foundations of massive stones, hewn and unhewn, can be distinctly traced.

In the soil of the surrounding plain, numerous fragments of stone and pottery show that it is the site of an ancient town, of

* Capt. Newbold says *the Haurán*; but this Germanism of Burckhardt should not have been left unaltered by Col. Leake. We might, with equal propriety, say *the Mecca, the Shám, the Beirút, &c.* The continual recurrence of such foreign idioms in newspapers has familiarized our ears to the Caucasus; and some writers, who ought to know better, write *the Taurus, &c.* Would they say *the Snowdon, the Ben Lomond?* —F. S.

† 'Ashtereh, or 'Ashtarrah, is the singular of 'Ashtaróth.—F. S.

‡ Reland, *Palestina*, p. 598. Col. Leake, in Pref. to Burckhardt's *Syria*, p. xlii.

which this Tel or mound was once probably the Acropolis. Its summit presents an irregular surface, now partly occupied by stone inclosures, thrown up by the Arabs to form sheep-folds. From the base of the mound there gush forth copious and never-failing springs of excellent water, which form a small reedy pool and marsh, affording an ample supply for very large flocks and herds. In July, 1846, there were upwards of 20,000 camels and more than 50,000 goats grazing there; as the fine pastures of the surrounding plain attract immense numbers of the 'Anezeh Arabs thither during the summer months. Upwards of 10,000 of them then lay encamped round the base of the mound, and between it and Nawa. This unfailing supply "of the clearest water," as Colonel Leake (Pref. p. xii.) justly observes respecting Mezáríb, "must have made it a place of importance in ancient times." The approximate height of the plain of 'Ashtereh above the sea, as indicated by the boiling point of water, is about 1300 feet.

Mezáríb,* I was informed by the Sheikh, was formerly called Riháni,† and was built with materials furnished by two ancient towns, Semach and Mangola.‡ The latter is close to Mezáríb on the E. In the wall of the castle at Mezáríb there is a Greek inscription, turned topsy-turvy, to the memory of "Quadratiames, son of Diogenes, who was beloved by all, and lived seventy years." Another fragment relates to a building erected under the superintendence of Diogenes and Buosichanus.

At Sanamein [*i.e.* the two images] there is a church in ruins, the walls of which contain fragments of the pillars of a Roman temple and several inscriptions.§

* Mezáríb is the plural of mizráb—a canal, an artificial watercourse.—F. S. It is spelt mezeirib in the Jihán-numá (p. 538), and mezeirib in the Manásik (p. 122).

† Riháni signifies *fragrant*, abounding in Rihán, . . . *i.e.* ocymentum, or marjoram.—F. S.

‡ Semaj and Mangolah: *j* final is commonly pronounced in Syria like *ch*, and *k* like a hard *g*. The first of these sounds is borrowed by the Arabs from the Turks, who, like the Germans, always give a final *medial* the sound of a *tenuis*; or, in other words, pronounce a final *sonant* as a *surd*. *Ch* is a sound foreign to the Semitic languages, but common in Turkish, Persian, and Hindí.—F. S.

§ Copies of seven of these inscriptions are given in Capt. Newbold's paper; but as they have been, with one exception, all published, it is not necessary to insert them here. Six of them are Nos. 4554, 4555, a, b, and c, 4556, and 4558, in Bœckh's *Corpus Inscript. Græc.* iii. p. 247-249. The seventh is only a small fragment of an inscription on the base of a statue erected by "the community" in honour of "some one who had performed his public duties in a religious manner."

Route from Damascus [Dimeshk] to Tel' Ashtereh.

First Day, to Şanameîn.

	H. M.	Genl. Direct.
From Bâbu-llah (the Gate of God) to the village of Elkâdam	0 15	S. 30° W.
Passed successively the small and nearly contiguous villages of Jiftib, El Sebeineb, and El Sebeinât (Zebeineh, and Zebeinât of Burckhardt), about a mile to the left.	0 25	
A spring and rivulet	0 30	
Cross the Nahr-el-berdi* [Papyrus river] running N.E. to the Bahre† el Merj [Meadow Lake]. Village of El Sherâfiyyeh, a mile to the right	0 15	
Gentle ascent over a spur of Antilibanus, running E. by N. to the heights (trap) of Lejâ, and about 200 feet high. This ridge separates the Ghûteb, or valley, of Damascus from the more elevated lands of Haurân. The stony tract of Wa'r-el jâmûs [buffalo's rough-road] lies immediately to the left.		S. 10° E.
From Damascus to the foot of this ridge, called El mefakkhar [the elevated], the base of the plain is a stratum of travertine often enclosing fragments, round or angular, of subjacent limestone and trap. A similar formation prevails in the merj [plain] all round Damascus.		
The ridge consists of a marine, chalky, and compact limestone invaded and altered by the great trap formation of Haurân.		
Summit of the ridges whence the great Mosque of Damascus bears N. 30° E. The Peak of Jebel El-thenâyâ ‡, at the Pass leading from the Aleppo road, bears N. 45° E., and Mount Hermon, W. 8° N.	0 32	
Descent to the large village of Elkiweh [Kusweh, in Abû-l-fedâ, Takwîm-ul-buldân, p. 253] on the left bank of a fine rivulet, El a'waj [the winding], which runs through gardens and groves of poplars and willows in a N. easterly direction from the Hâşibiyah § mountains to the ¶ Bahre† el merj. Crossed by a fine paved bridge, in which there are fragments of columns, &c. Soil, a rich brown loam, interspersed with round and angular fragments of basalt and limestone.	1 8	S. 10° E.
Kiweh, || a conical peak (truncated cone of trap, 2 miles distant) bears E. 26° S.; Mount Hermon, W. 16° N.		
Short ascent from the Bridge to Khân Dhû-l-Nûn, ¶ a station on the Great Pilgrim's road.		
Khân Dhû-l-Nûn, a station on the high road of the Pilgrims. It is a large, square, castellated Serâi, flanked by semi-circular towers of basalt. A rivulet, which forms a marsh in front of the gate, runs towards the E. There are remains of a causeway of rough-hewn blocks of basalt.	0 40	
Bearings from Khân Dhû-l-Nûn :—		
Village so called, distant about a mile in the plain, S. 40° E.		
Kelb Haurân [The Dog of Haurân], highest peak in the ridge E. of Haurân S. 22° E.		

* Baradâ, Abû-l-fedâ, p. 230.

† Etnaia, Newbold; Salmaya, Burckhardt, p. 43.

‡ Hasbeya, in Burckhardt and Capt. Newbold's paper.—F. S.

§ Probably it should be Buheiret, the diminutive of bahre†—a lake.—F. S.

|| Misspell Kiweh, by Capt. Newbold. It should be pronounced Kusweh, according to Abû-l-fedâ (Takwîm, 253).

¶ Danûn of Burckhardt, and Capt. Newbold Dhû-l-Nûn, pronounced Dhû-u-nûn, is abbreviated into Dû-u-nûn, and Dunûn by the common people, who never give its proper sound to the latter dhâl (dh), and shorten the first syllable, by throwing too much emphasis on the last. The name of Dhû-l-Nûn, the patriarch of the Şôfis, is held in great veneration by all Moslems. (D'Herbelot, *Dhouloun*.)—F. S.

Bearings from Khán Dhú-l-Nún—*continued*.

	H. M.	Genl. Direct.
Mount Hermon	W. 20° N.	
Kisweh Peak	due E.	
Village so named	N. 32° E.	
From Kisweh the road passes over a partially cultivated plain, bounded to the E. by a jagged range of trap called Jebel máni' [Mount Hinderere], from 200 to 600 feet high; and to the W. by Antilibanus, comprising the steep slopes of Mount Hermon rising to nearly 900 feet above the level of the sea. This great plain, down to Bosra and Salkhad, rests on an enormous sheet of trap, both vesicular and compact; but the first variety is most prevalent, and indicates the absence of any great pressure during eruption. The soil of this plain is brown of various shades, generally of a dark coffee-colour, and rarely of the deep black of the soil of India. Its surface is often black with fragments of basalt scattered over it, in which the iron has been gradually oxidized by the action of the atmosphere, and mingled with disintegrated siliceous and alumen. This at first forms a dark-greenish brown soil, but eventually, by further oxydation, becomes a rusty brown, or dark coffee-coloured earth, which, when mixed with lime or vegetable matter much decayed, commonly becomes darker or nearly black.	3 4	S. 32° W.
Continuing across the plain, the road passes near the village of Láki, a mile distant on the right, and by Kaṣr Firaún [Pharaoh's Castle], called Subbet Firaún [equivalent to Tel Firaún] by Burckhardt (p. 54); a ruined tower on a long, flat-topped range of trap, a mile and a half to the right. This chain is called Jebel Khiyárah, and continues some miles further to the S. running parallel to the Jebel máni'.	1 35 0 48	S. 2° W.
This tract is subsequently encumbered with blocks and bare plateaus of basalt, the outgoings of a large dyke, with a surface deeply scored and corrugated, like that of recent streams of lava, as far as Ghabghib, [erroneously] called Ghabárib by Burckhardt.* It is a village of about 20 houses, inhabited by Moslems, and has an old khán supported by pillars of basalt. The bas-reliefs over the gateway resemble those found on ruins of the age of the Lower Empire.	0 36	S. 5° E.
The plain is here in many places rocky; and passing Mutbir and Dúdi on the left, we reached Sanameín [the two idols], a village containing 60 houses, inhabited by Moslems. Its entrance is encumbered by great blocks of basalt.	1 0 0 53 8 37	
Mount Hermon here bears	N. 33° 30' W.	
Kelb Háirán	S. 42° E.	

Second Day to Nawa.

Over the plain, partially covered with blocks of trap, to the village of Inkhil [Onkhal, or Onhál], containing about 50 houses, inhabited by Moslems, difficult of access from being placed in the midst of bare trap-rocks. The skeletons of several ancient buildings remain here with fragments of columns and entablatures, all in the style of the Lower Empire.	1 35	S. 41° 30' W.
Sanameín bears from hence	N. 41° 30' E.	
The plain is strewn with trap-blocks (in situ); the soil, rust-coloured, partially cultivated with dhurrah [sorghum vulgare], as far as the ruins of Omm Turrah (Burckhardt, p. 246), covering an area of about a quarter of a mile, and consisting of foundations and skeletons of houses with fragments of pillars and small heavy basalt doors, all similar in style to those at Ezra, Bosra, &c.	0 30	

* His ear mistook gh for r; a mistake very easily made.—F. S.

	h. m.	Genl. Direct.
Nawa here bears S. 36° W.		S. 36° W.
Tel Onhal or Onkhal [Bee or Palm-hill], a conical hill of trap, with ruins of foundations and skeletons of houses formed of basalt.	0 40	
Cross the road from Jásim to Shernakín,* which lies about 2 miles to the left.	0 28	
Bterra [Obteira?—Obta', of Burckhardt, p. 239], foundations and skeletons of houses two stories high, the upper ones being supported by round arches of excellent masonry, fragments of pillars scattered about, all basalt.	0 44	
Mount Hermon bears N. 15° W.		
Kelb Haurán S. 53° E.		
The surrounding country is an irregular plain, dotted with numerous tels, mounds, and truncated cones of basalt, cultivated near the villages with wheat and dhurrah. The wheat had been reaped and housed in the latter end of May and beginning of June. The dhurrah was now (July 2nd) a foot high. The rest of the plain, with the common billán (?) and camel's thorn [shauku-l-jimál]† afford excellent pasture for the flocks and camels of 'Anezeh Arabs.	3 57	
Across the plain to Nawa	1 15	S. 36° W.
Mount Hermon bears N. 10° W.		
Over the plain to Sheikh Sa'd,—a saint's tomb on a hill, at a small distance, to the right of which there is an extensive ruin.	1 45	S. 14° W.
Over the plain and across a watercourse to Tel 'Ashtereh	0 40	S. 34° W.
	16 14	

[The whole distance, therefore, is 16 hours 14 min., or about 50 miles. In spelling the names of the places mentioned in this paper, Abú-l-fedá's *Geography*, and Kátib Chelebí or Hájí Khalífah's *Jihán-numá* (*Speculum Mundi*), together with other Asiatic works, have been followed, though Capt. Newbold often differs from them in his orthography, as he was evidently misled by Burckhardt, whose ear occasionally betrayed him into error from want of access to books, which would have been safe guides; and in the earlier part of his travels in Syria, not sufficiently familiar with Arabic to be aware of such mistakes. It is much to be lamented that M. Bianchi's 'Version of the Menásiku-l-hajj,' published by the Geographical Society at Paris (*Recueil de Voyages*, ii. 81), and M. Jaubert's translation of 'Idrisi' (Paris, 1836), were so hastily prepared for the press as to be disfigured by numerous errors. The latter might have been materially improved by a collation of the MSS. at Oxford, one of which is perhaps 500 years old; and the *Menásik* is in many places copied from the *Jihán-numá*, which is always correct when derived from Asiatic authorities, and might have been easily consulted at Paris.]

[Dr. Schütz, Prussian consul at Jerusalem, gave to Capt. Newbold a copy of the following inscription in the interior of the mosque erected over the tomb of Abraham at Hebron, which he had received from a Muslimán. It is remarkable as having been, with the exception of two proper names, accurately transcribed by a Muslimán, unless he were a Cypriote or Candiote, some of whom can read as well as speak Greek; and though not older, probably, than the fourth or fifth century, if so

* Keskin in the *Menásiku-l-hajj*, p. 122.—F. S.

† Perhaps these names of plants are used in India; they do not occur in our dictionaries, unless *shauku-l-jimál* be synonymous with *shauku-l-ba'ir*, i. e., a thistle.—F. S.

old, it shows that at that early period the Christians believed this to be the burial-place of the patriarch.

ΑΓΙΕΑΒΡΑΑΜΒΩΗΘΘ ΟΝΔΟΥ
ΛΟΝCOYΝΙΛΟΝΤΟΝΔΗΡΗΛ
ΡΑΡΗΛΚΑΙΑΓΑΘΗΜΕΡΟΝ
ΚΑΙΥΓΙΑΝΚΑΩΜΑΙΒΙΟ[N]ΚΑΙΘΩ
ΜΑCΙΑΝΚΑΙΑΒΛΑΚΑΚΑΙΑΝΑ
CΤΑCΙΑΝ

“ Holy Abraham, assist thy servant
Nilus, son of Daniel (?) . . .
and Agathemerus, and Hygia,
and Omobius (?), and Thomasia,
and Ablax, and Anastasia.”

[The dotted letters, though distinct in Captain Newbold's copy, are in part at least wrong: Omobius and Ablax are doubtful; the rest is perfectly clear and correct.]

The following extract from the *Jihân-numâ* (pp. 538, 539) will clear up some difficulties and throw some additional light on the itinerary of Captain Newbold, and that given by Burckhardt (*Syria*, p. 656):—

“ When the pilgrims have assembled in the noble Damascus (*Shâm-sherif*), the Emir Hâjj [commander of the pilgrims], accompanied by a great procession, on the 15th of the month of Shawwâl, to the *Kubbetu-l-hâjj* [chapel of the pilgrims], proceeds from thence to Kusweh: they then advance in different parties from the *'Aḳabaṭu-l-hâjjâj* [ascent of the pilgrims], and meet together at Mezeirib.

“ In fact, they go from Kusweh to Dhû-l Nûn, where frumety made with sour milk [*terkhâneh*] is cooked and distributed to them, in consequence of a charitable bequest made by Ibnu-l-Huşṇa; and at that place a toll is levied on the Muslim pilgrims. Then they go on to Sanameîn, passing in the way by Khâni Zeit. Sanameîn is a village belonging to the *Ḳawwâs-ôghlû* family of *Turkomâns*; it is well supplied with water; and has various kinds of birds, and the well-known animals called leeches are caught in its reedy pools and carried for sale to Damascus. The pilgrims then go on to Tel Fir'aûn, and afterwards to Ghabâghib, where there is a tower built by Sultân Selim. Here the pilgrims of the *Ḳawwâs-ôghlû* family, whose tents (*direkler*) extend all the way between Dhû-l-Nûn and Sanameîn, are waiting for the rest. From Sanameîn they go to Mezeirib, passing in their way the stream at Dileh, where there is a spring, and at Mezeirib they must wait till the Emir Hâjj comes up.”

“ Mezeirib, which is in the country of Haurân, has a spring; Sultân Selim built a castle there: and as soon as the pilgrims have arrived, a market (*bâzâr*) is established, and they halt there five or ten days, or more. Ketibeh [*Kethineh*, Burckh.], lying to the S.W. of Mezeirib, has many springs and streams, but it is in the opposite direction. Thence, on the Haurân side of the road, they proceed, half a day's journey distant, to Ezra'ât,* where there are wells with water. From

* Edhra'ât, in Abû-l-fedâ; Draa, in Burckhardt, p. 241.

thence they proceed to Mafrak, N.E. of Salkhad, on level ground, but waterless. Sometimes, from fear of floods, they do not halt at Ezra'at. From Mafrak they go to Zarḳā (Wādi Zarka of Burckhardt, p. 249), where there is running water, with a ruined castle called Kal'atu-l-azrak [blue castle], with several streams, and date-trees. It is one day's journey to the N.E."]—F. S.

XX.—*Volcano of Saddle Island.*—Being an extract from the Log of H.C. steam-vessel 'Victoria,' Lieut. W. C. BARKER, Commander. Communicated by the Court of Directors of the Hon. East India Company.

FRIDAY, August 14, 1846.—A.M.: Fresh breeze and thick cloudy weather. Daylight: Thick cloudy weather. Passing the Zebayer Island at 10h 30m, observed a very threatening appearance to the westward; made all snug; secured guns on board, boats, &c.; very vivid lightning, followed by distinct though distant thunder. Observed smoke issuing from the summit of Saddle Island, the westernmost central island of the Zebayer group, in a dense sulphurous-looking cloud, till the thickness of the weather shut it from view, 10h 30m. A very heavy squall from the west-north-west, accompanied with thunder and lightning, with very heavy rain. Noon: Strong gusts and rising sea; shipping heavy seas; passed the steamer 'Hindustan,' bearings Northern Zebayer Island (Haycock) N.N.E. about four miles. P.M.: The wind suddenly died away; weather clearing up; and again freshened up. Strong breeze, with dark cloudy weather; incessant rain. 3h 5m: The Quoin Rock bore E.S.E.; squally unsettled weather. Sunset: Thick cloudy weather, with heavy rain. 7h 15m: Jibbel Tîr High Peak E.½S. 8h: Fresh breeze and cloudy, with heavy rain. Much lightning to the northward. Midnight: ditto weather.

The Zebayer Islands, of which Saddle Island is one, are in 15° 7' N. and 42° 12' E. They are all of volcanic origin; but there is neither record nor tradition of their having been in active operation. Jibbel Tîr, in 15° 32' N., 41° 55' E., was observed to be smoking when visited by the officers of the 'Benares,' during the survey of the Red Sea, but never since. There is a tradition among the Arab pilots of its having been on fire since fifty years ago. It bears the name of Jibbel Dūkhan (Hill of Smoke) among many of them. It certainly has the appearance of having been in active operation at a much later period than the Zebayer Islands.

Everything regarding these islands is of great importance to the navigation of the Red Sea, as they are right in the track of vessels proceeding up and down.

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ERRATA.

Page xlix., line 9, *for* Ancient Italy *read* Upper Italy.

— lxxiv., — 17, — D. *read* Dr.

— — — 18, — Christ Church College *read* Corpus Christi College.

— 49, — 9, — vertile *read* fertile.

— 50, — 28, — differet — different.

— 65, — 31, — extrance — entrance.

— 61, — 1, note, *for* Petis *read* Petit.

MAP
to illustrate
M^r LAYARD'S PAPER
ON
KHUZISTAN

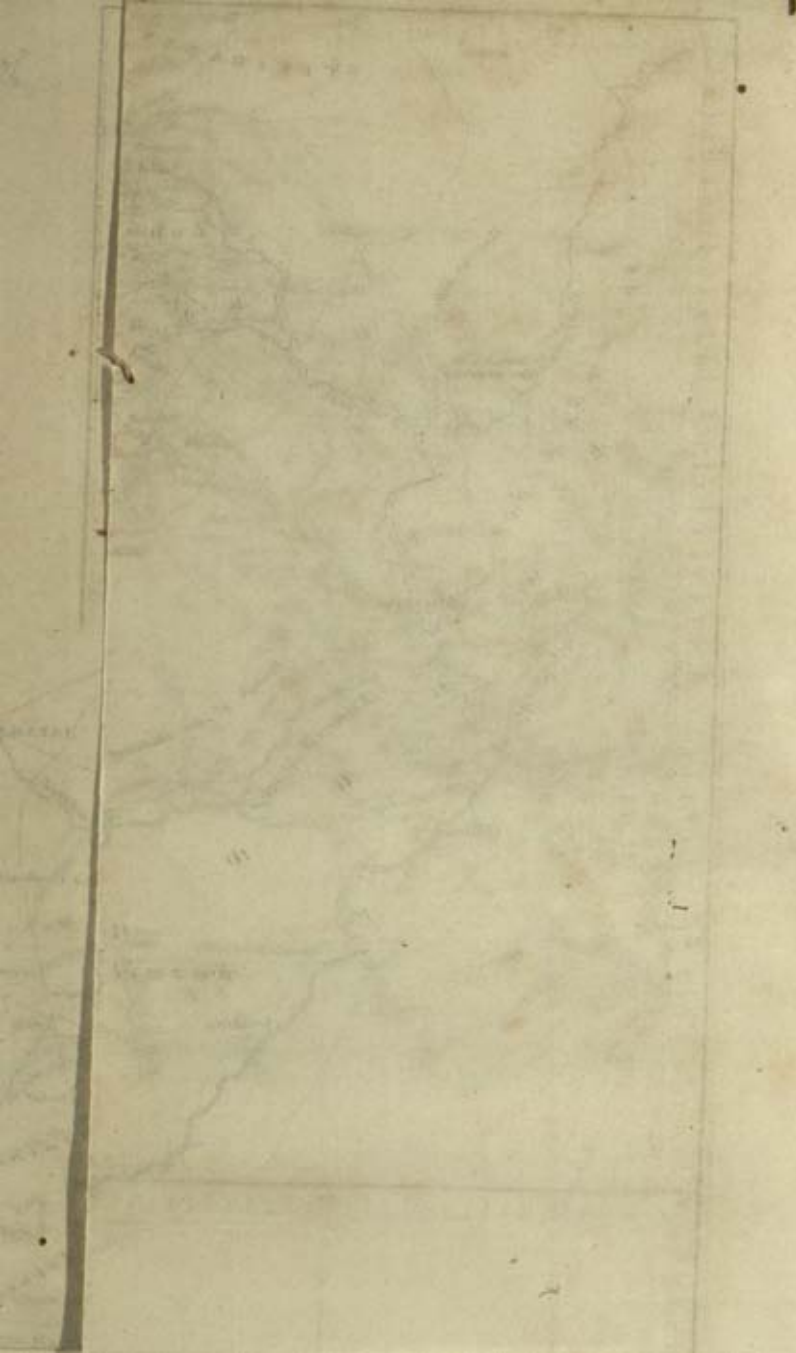
English Miles

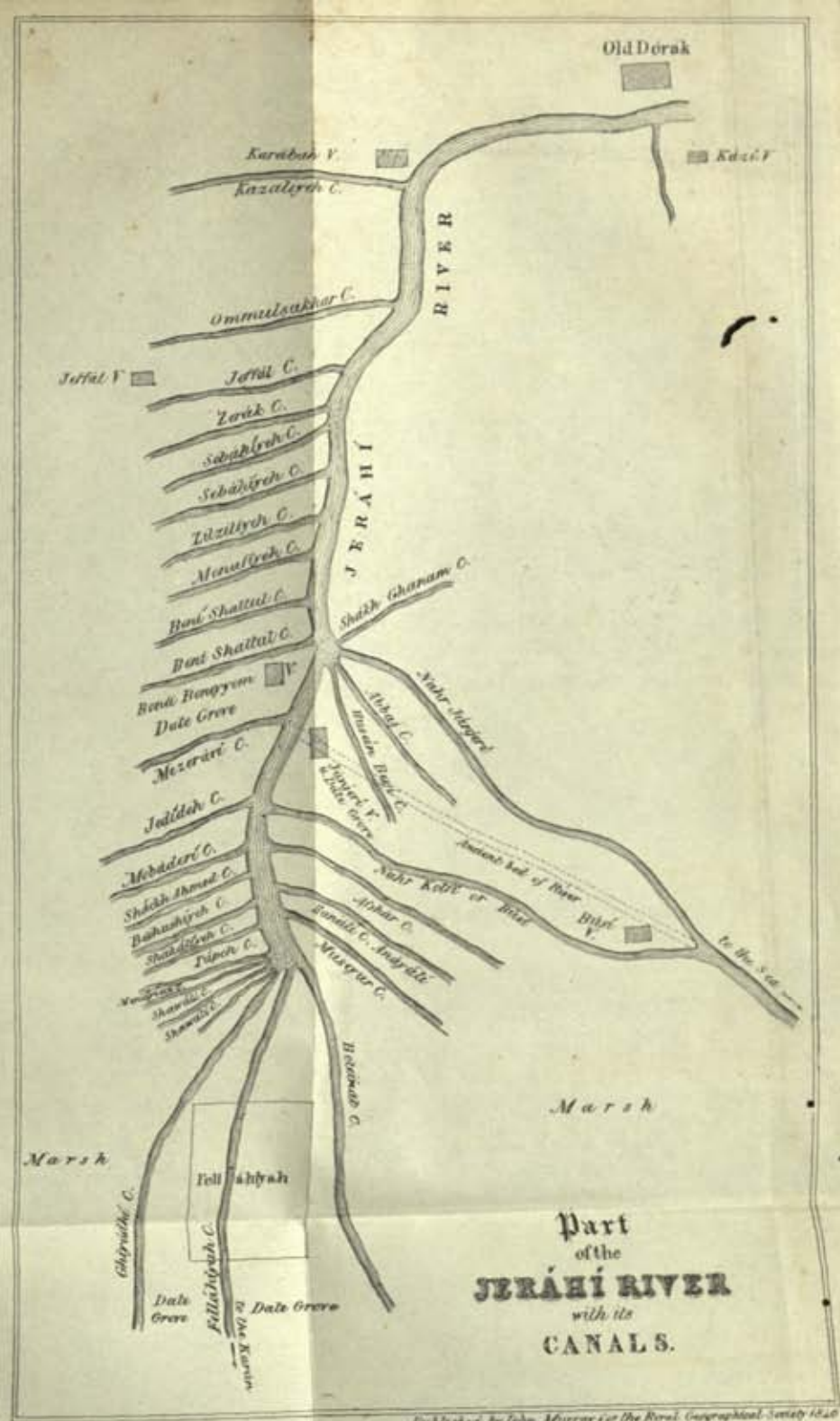


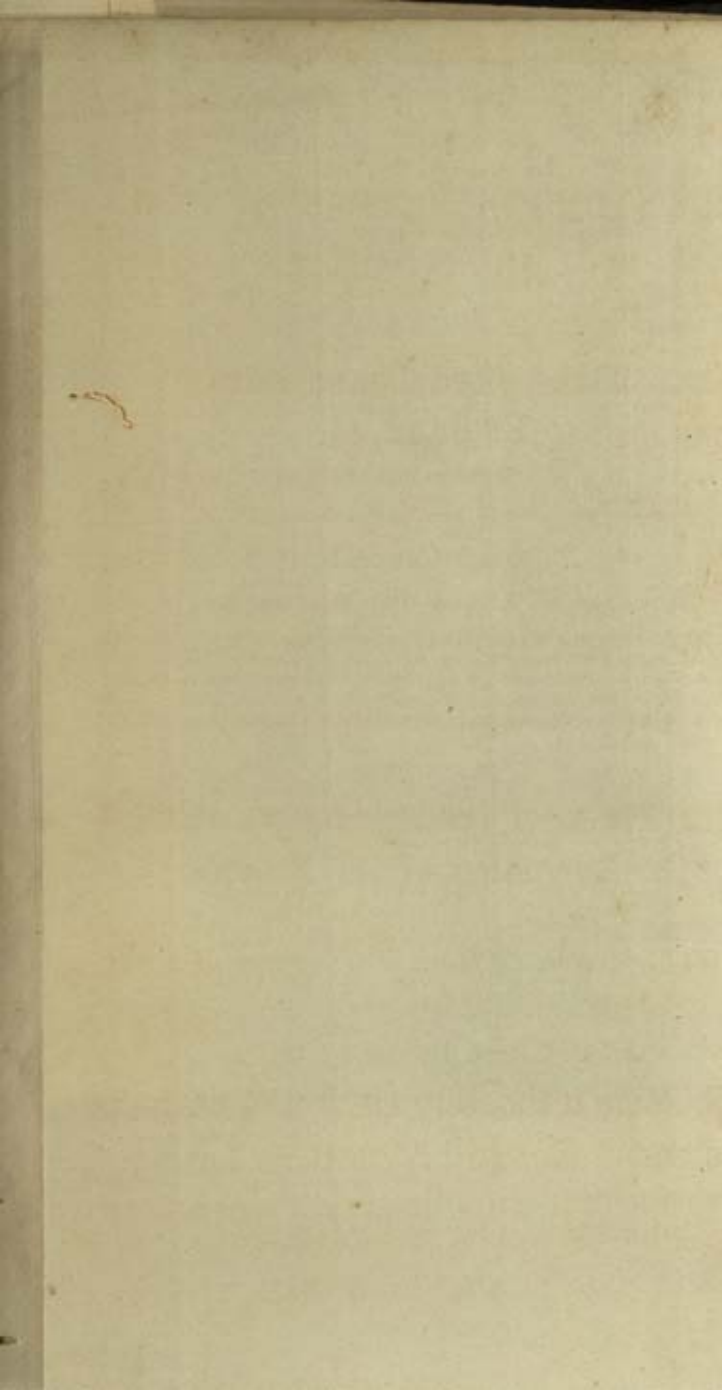
Longitude East from Greenwich

PERSIAN GULF

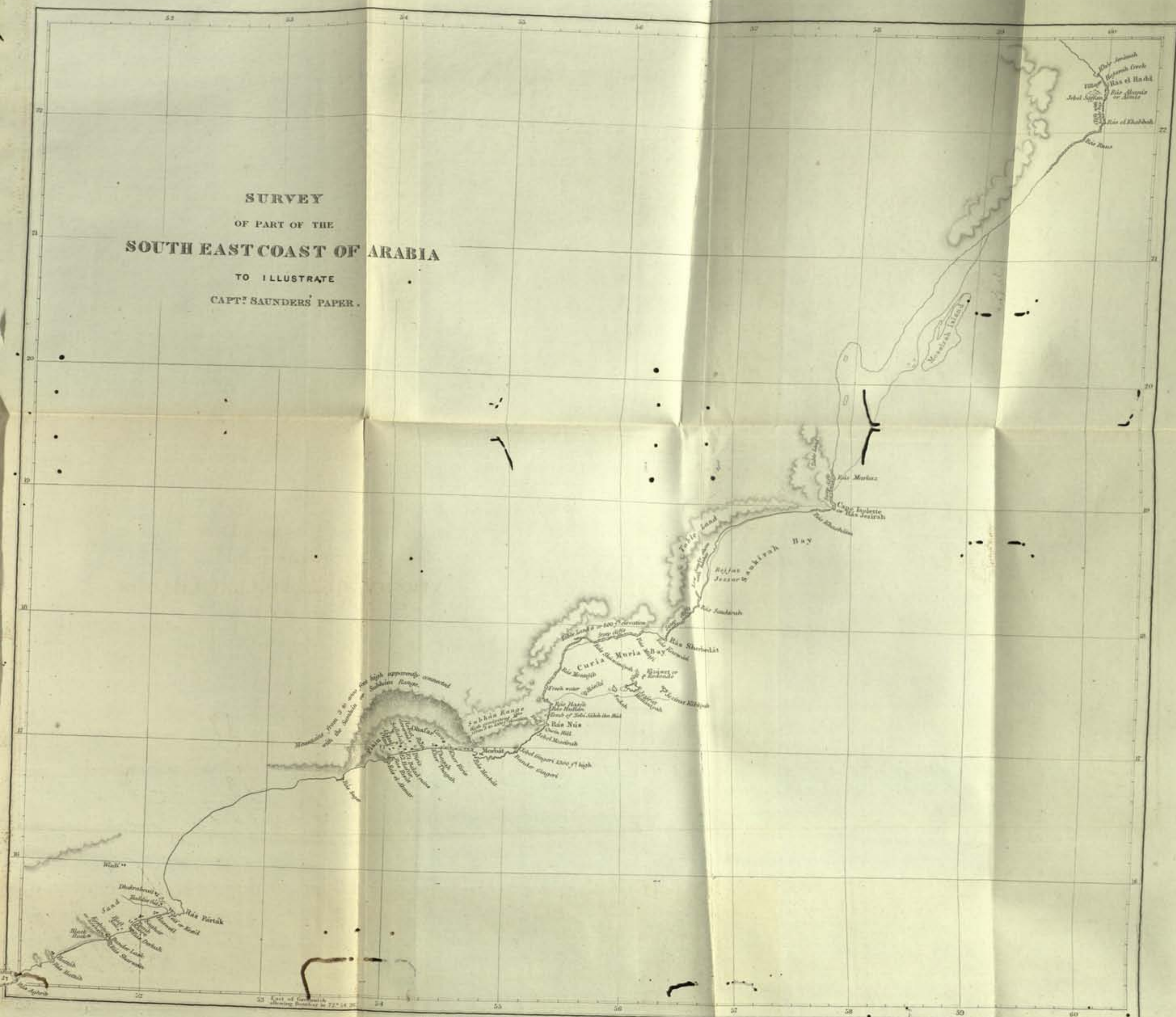
John Arrowsmith







SURVEY
OF PART OF THE
SOUTH EAST COAST OF ARABIA
TO ILLUSTRATE
CAPT. SAUNDERS' PAPER.









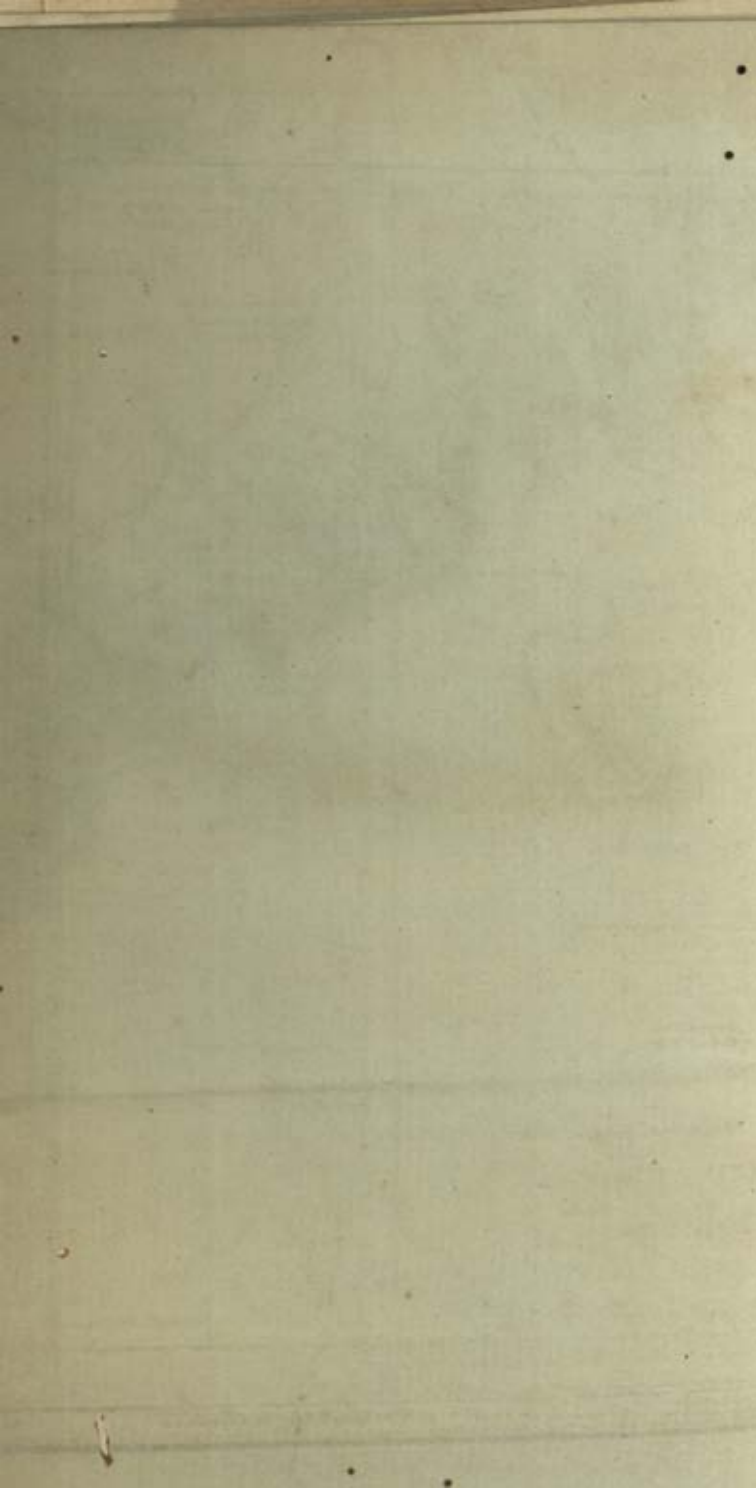
JEBEL ISKEL LAKE
Fresh water
The Soundings of this Lake are in Feet

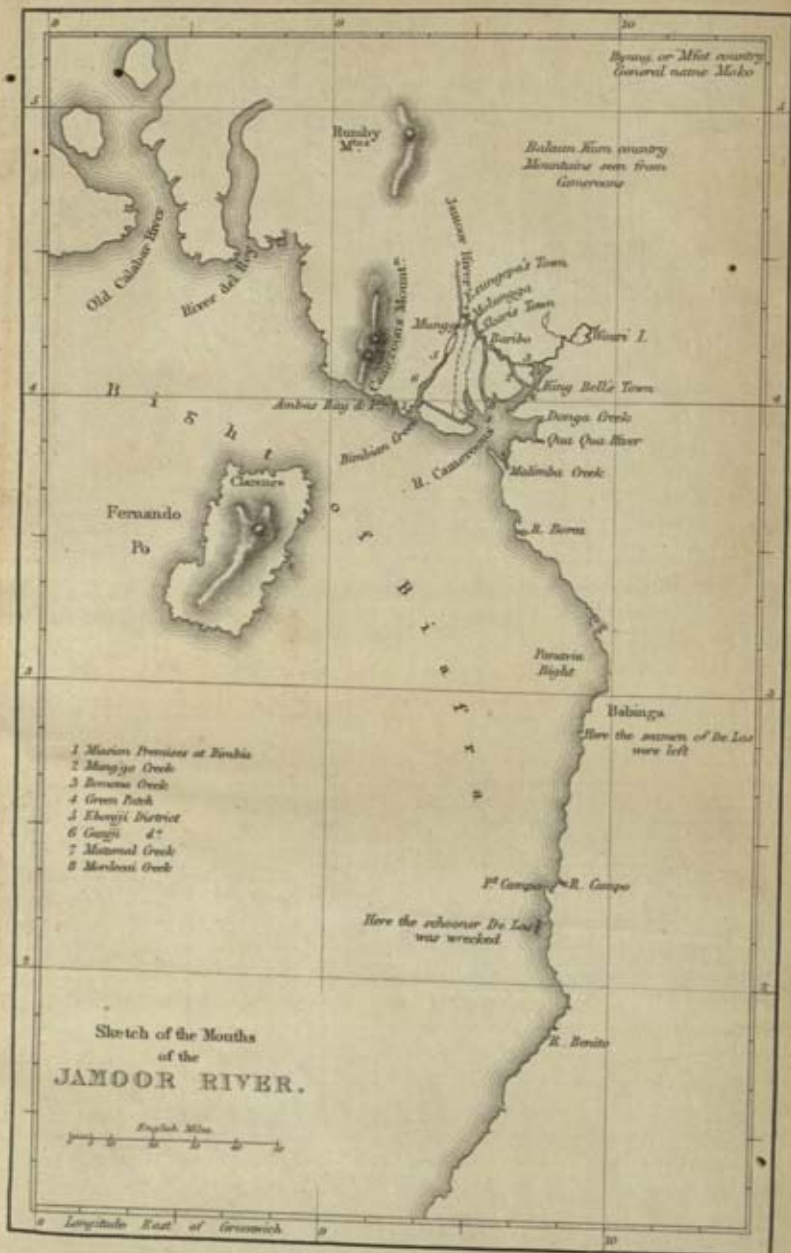
BENZERT LAKE
Salt water
The Soundings on this Lake are in Fathoms

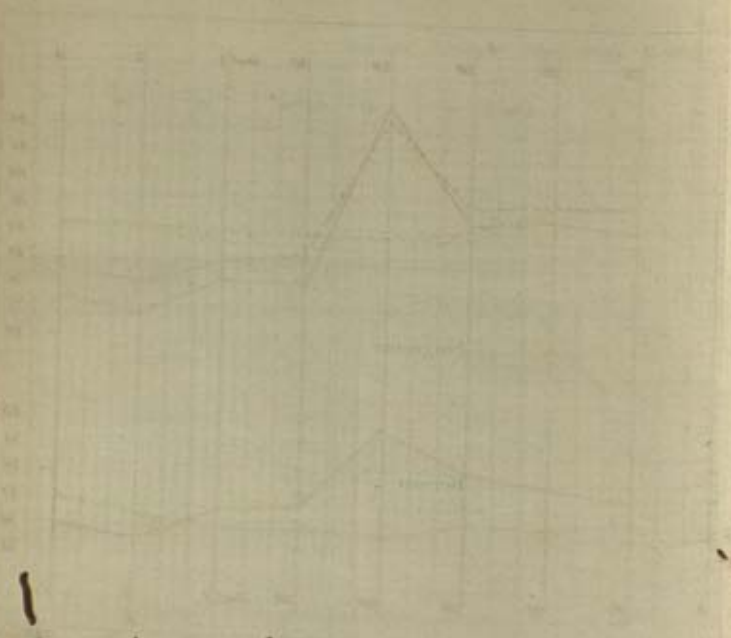
BENZERT LAKES

SURVEYED BY COMMANDER T. GRAYES

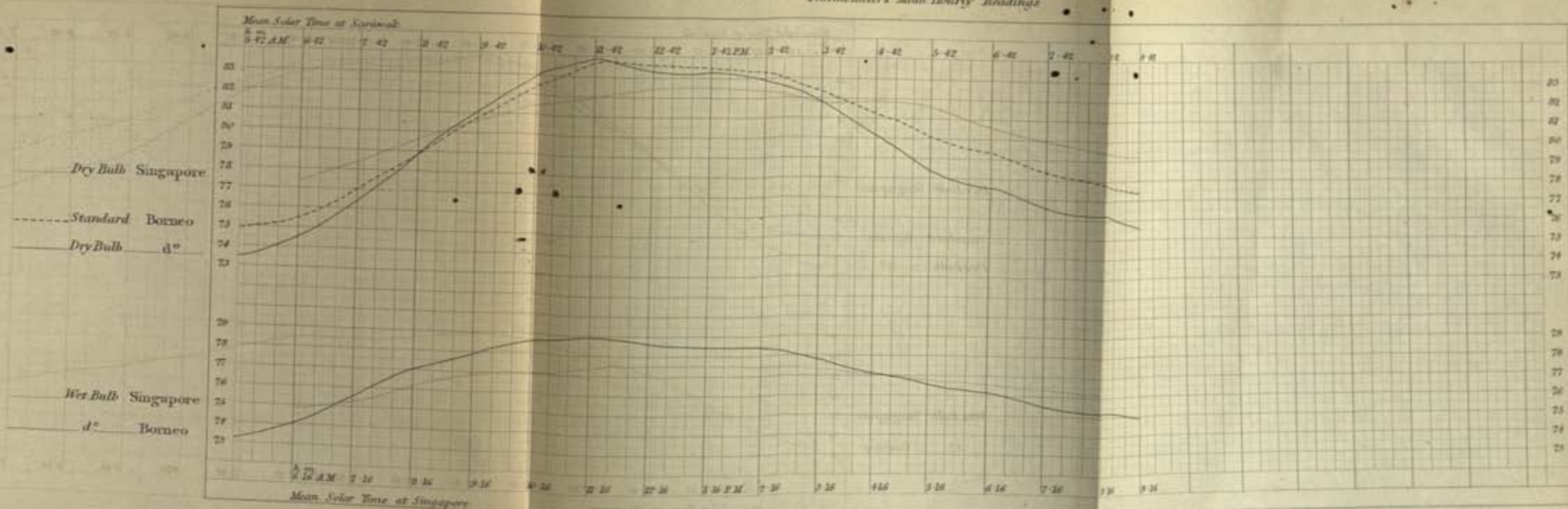
1845



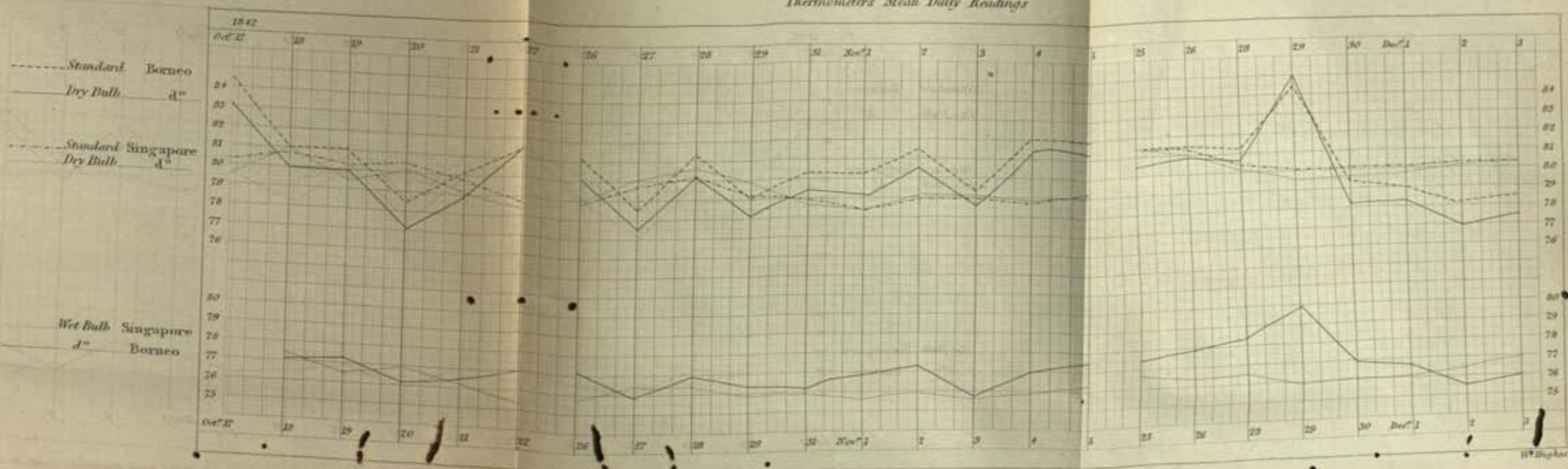


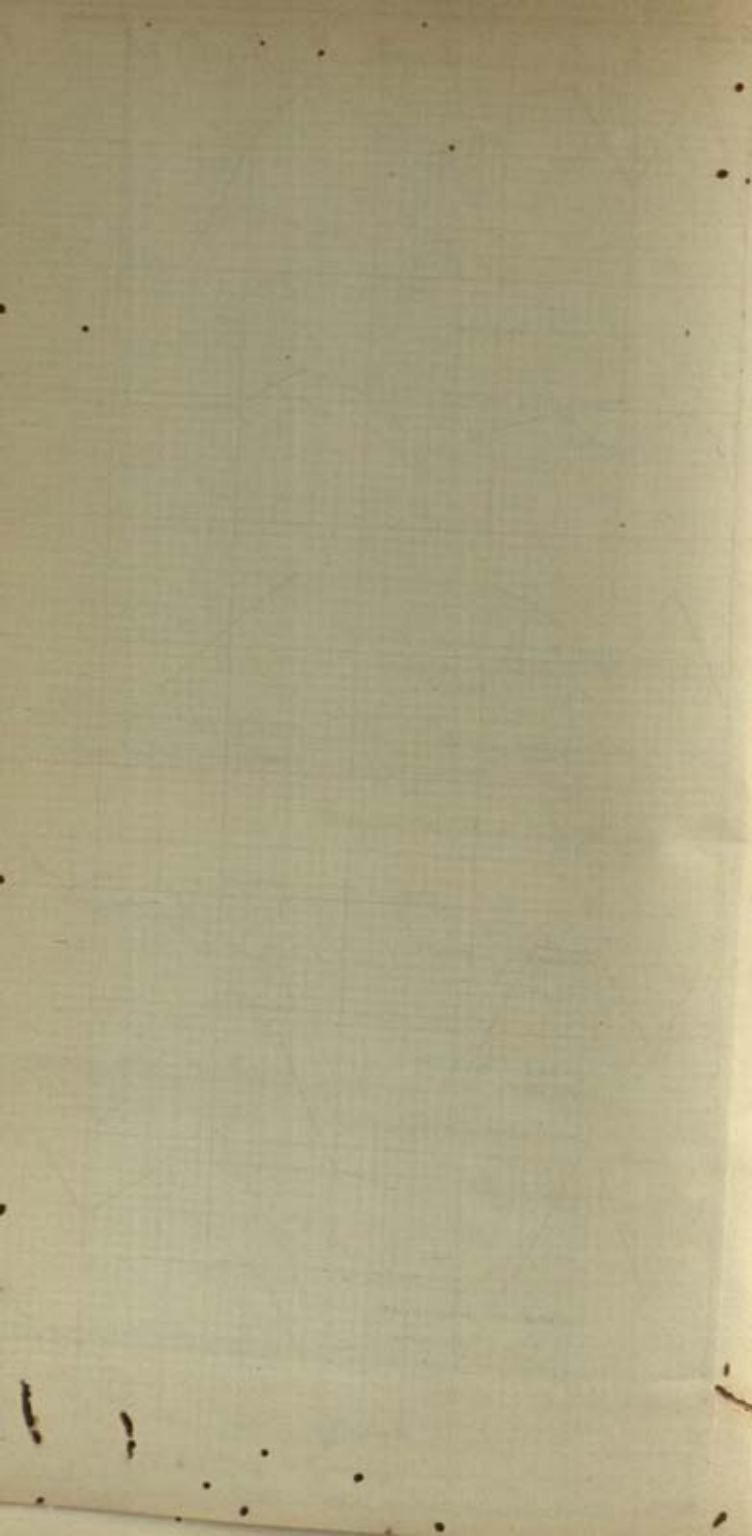


Thermometer's Mean Hourly Readings



Thermometer's Mean Daily Readings





Readings Dry Bulb at 11 A.M. Borneo

1° 1° 1° Singapore

Readings Wet Bulb at 11 A.M. Borneo

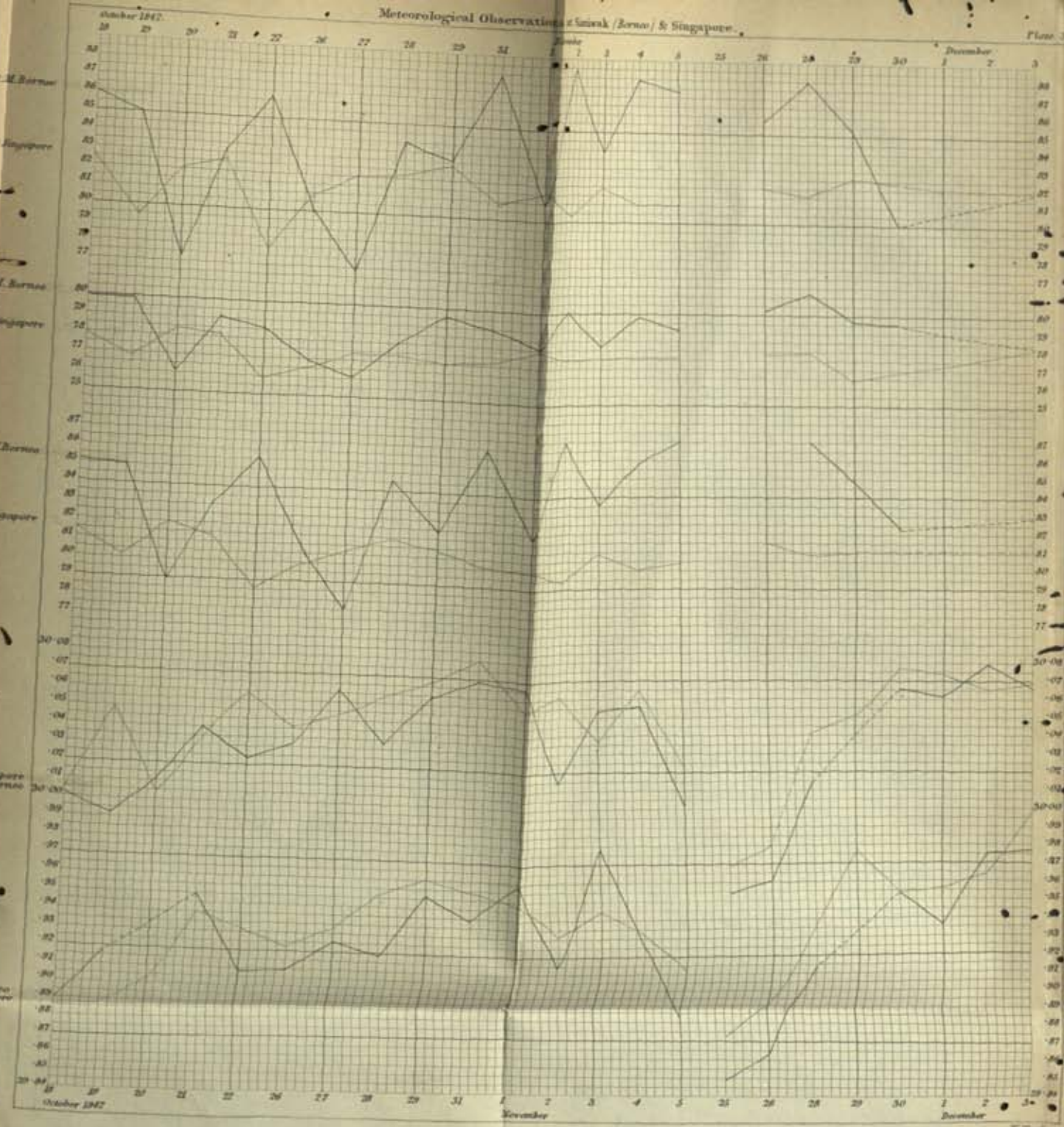
1° 1° 1° Singapore

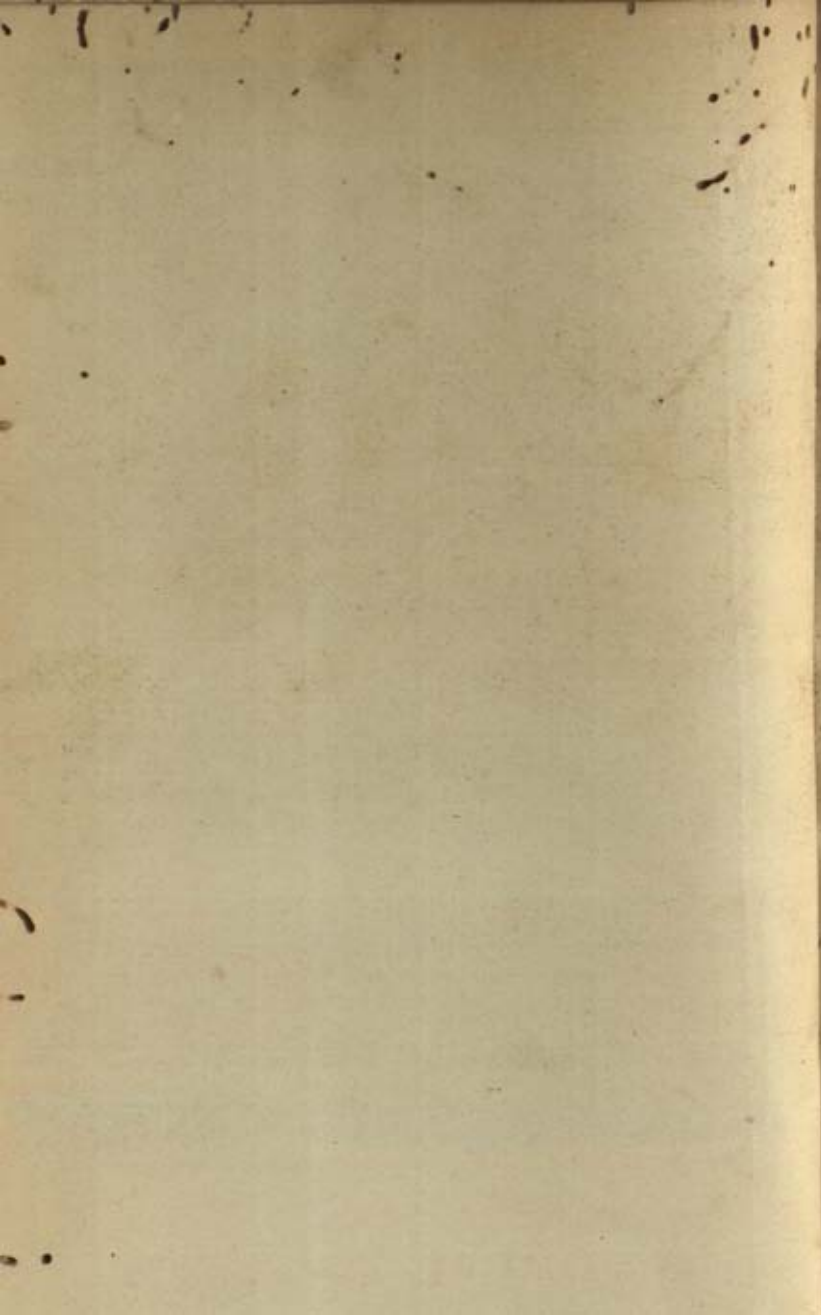
Readings Standard at 11 A.M. Borneo

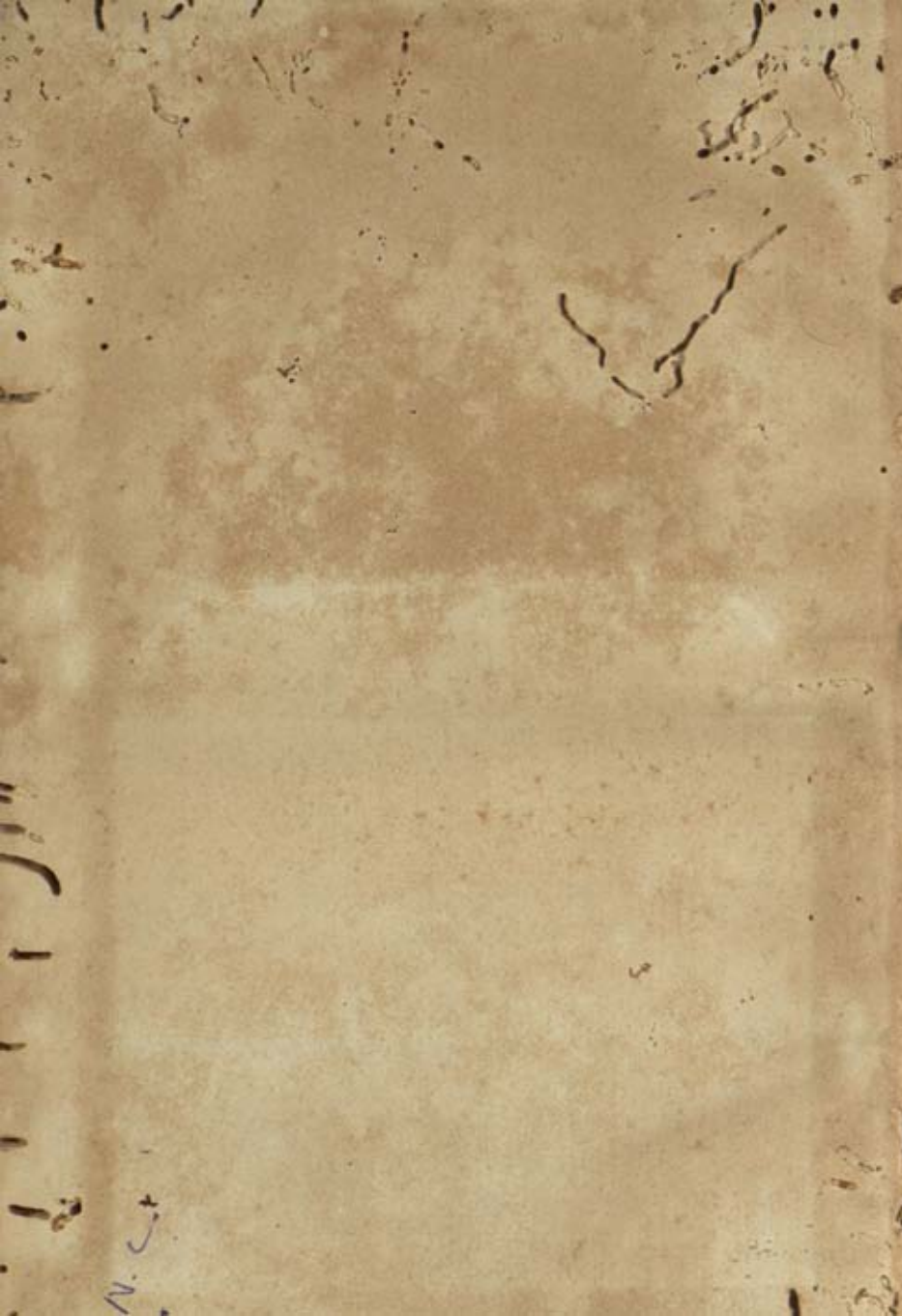
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